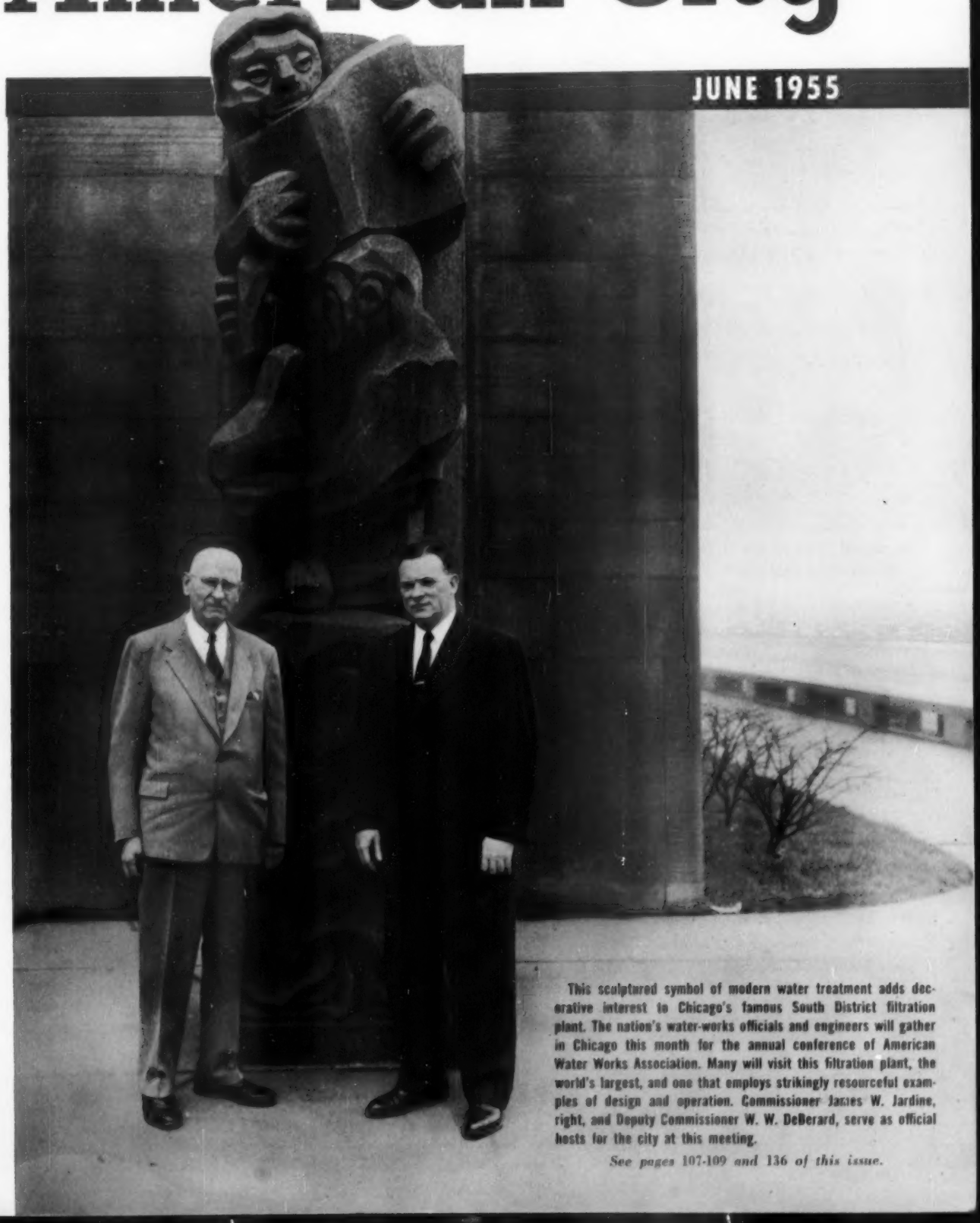
The American City

JUNE 1955



This sculptured symbol of modern water treatment adds decorative interest to Chicago's famous South District filtration plant. The nation's water-works officials and engineers will gather in Chicago this month for the annual conference of American Water Works Association. Many will visit this filtration plant, the world's largest, and one that employs strikingly resourceful examples of design and operation. Commissioner James W. Jardine, right, and Deputy Commissioner W. W. DeBerard, serve as official hosts for the city at this meeting.

See pages 107-109 *and* 136 *of this issue.*

Modernizing important Philadelphia link in one of nation's principal highways

Laying dense, durable Texaco Sheet Asphalt surface over coarse-aggregate Texaco Asphalt binder course.

Compacted Sheet Asphalt surface (left). It forms a permanent bond with asphalt binder course.

Completed Texaco Sheet Asphalt pavement on one of new lanes of U. S. Route 1 in Philadelphia.

CONTRACTORS

Francis A. Canuso & Sons, Philadelphia

Union Paving Company, Philadelphia (Asphalt)

U. S. Route 1 connects northern Maine with Key West, Florida. It is one of the most heavily traveled arteries in America's network of highways.

The section of US-1 within the city limits of Philadelphia, known locally as Roosevelt Boulevard, serves a volume of traffic equalled by few other sections. Approximately $6,500,000 is being spent by the Pennsylvania State Highway Department to modernize Roosevelt Boulevard, converting it into a divided highway to permit the freer, safer movement of vehicles.

A heavy-duty, plant-mixed Texaco Sheet Asphalt pavement is being constructed on 3½ miles of US-1 in Philadelphia. Laid in two courses, the new pavement has a compacted thickness of 2½ inches. Philadelphia has constructed millions of square yards of Texaco Sheet Asphalt in the past. The durability and low upkeep cost of this resilient, joint-free paving have been demonstrated under that leading city's heaviest traffic.

City officials who would like helpful information on methods and materials recommended for all types of asphalt paving suitable for city streets can obtain two free Texaco booklets on the subject by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3 Philadelphia 2 Richmond 19

TEXACO

REG. T. M.

TEXACO ASPHALT

JUNE 1955

The American City

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"WHAT! NO KITCHEN TELEPHONE?"

Of all things, Mr. Bridegroom! Surely you don't expect that lovely new bride to get along without a telephone in the kitchen!

Maybe there was a time when one telephone seemed enough, just as one radio and one bathroom and one car seemed enough.

But everybody is used to more comfort and convenience these days. And there's nothing that makes life so much easier as telephones around the home.

In the living room, of course. In the kitchen, conveniently hung on the wall. In the bedroom, to save steps and for added peace of mind both day and night. For the son and daughter who'd like telephones of their own, with separate listings.

Would you like to know more about complete telephone service and how surprisingly little it costs? Just call the business office of your local Bell telephone company.

Bell Telephone System *Complete telephone service for home and business*

Supports Proposal for Federal Department of Urban Affairs

To the Editor of THE AMERICAN CITY:

Your October 1954 issue (page 19) contained a short article titled "Federal Department of 'Urbiculture' Proposed." In this article you described the suggestion of Congressman J. Arthur Younger that a new cabinet-rank department be set up "to do for the city population what we are doing for the farm population through the Department of Agriculture." Toward the end of the article you stated your belief that there was less need for such a department now than four decades ago when President Woodrow Wilson gave some thought to the idea. Among your reasons for this view were the growth of such national organizations giving aid to municipalities as the "1313" group in Chicago, the National Municipal League, the work of various foundations, and the state leagues of municipalities. You then called on your readers for their views. If you will pardon my delay in responding, I should like to offer some views supporting Congressman Younger's proposal.

Your satisfaction with the present status of municipal research is gratifying to those who have worked hard in developing such research for management and planning purposes. However, to say that with the research so far achieved we can be less reliant on Uncle Sam in coping with urban problems is to understate the complexities of the urban difficulties that have evolved over the past half-century.

In 1900 only six cities had over half a million people. These six cities

contained a total of 8,074,561 people, about what New York City alone contains today. In 1950, 18 cities had more than half a million people each. The population of these 18 cities was 26,591,395 in 1950, over three times the population which cities of this size contained in 1900.

While federal, state, and local expenditures have risen tremendously since the turn of the century, the fact remains that urban growth and complexity have exceeded anything imaginable in 1900 or 1910. Concepts of local service and local responsibility have broadened during this period.

The management of these complex urban systems requires investment and planning. There is certainly more money spent on planning, research, and basic statistical collections than formerly; but expenditures for these purposes are not equal to the task nor are they comparable to expenditures by private enterprise for research and planning.

In the light of the advances expected over the next 25 years in management techniques and technological processes, comparable progress will be needed in the planning and management of urban affairs. This will require the development of precise data for various aspects of urban development, the pursuit of applied research, the building of a body of knowledge about cities and parts of cities, particularly in reference to the dynamic social, economic, and physical factors that mold them. The framework for these approaches can be developed on the federal level. A new federal department is needed.

Forty years ago, THE AMERICAN CITY sounded a clarion call, proposing a Department of Municipalities. However, the need for such a cabinet rank department is not behind us; it still lies ahead. Congressman Younger's proposal has great merit. The nation needs a Department of Urban Affairs now.

HENRY COHEN
Senior Management Consultant
Office of the Mayor
City of New York

Bare Midriff Incinerators

Review of the cost of building the Fort Lauderdale incinerator shows it to be remarkably low (Open-Air Incinerator Design, April, p. 136). Its cost runs only $1,720 per ton for a 250-ton plant, or well below the national average. One important reason for the low cost apparently is that the people of Florida, as well as its incinerators, can get along with a "bare midriff." Further north, our people as well as our incinerators must be more completely clothed.

For example, in Philadelphia, incinerators must meet very stringent air-pollution specifications, necessitat-

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Douglas S. Powell, Associate Editor • William T. Dulac, Production Editor

Editorial and Executive Offices:
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Edgar J. Buttenheim, President • George S. Conover, Vice-President
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CITY BUDGET BEATER

The City of Greenville, Mississippi, works its three Caterpillar D4 Tractors eight hours a day, right through the year. The machine shown here is backfilling a sewer. But that's only one of its many jobs. It rough-grades streets, bulldozes broken concrete, and trenches and fills at the city sanitary garbage disposal site.

Regardless of the job, the CAT* D4 Tractor is built to do *more work at less cost* than any competitive unit.

That's one big reason for the popularity of the D4 in municipal use. Here are more: It's small enough to operate easily and economically, yet big and powerful enough to handle the vast majority of daily jobs. With 48 drawbar HP, the tractor has a maximum drawbar pull of 10,600 pounds in first gear. The four-cylinder, four-cycle engine is designed for long life and economy. It runs efficiently on non-premium No. 2 furnace fuel.

The husky final drive, heavily braced frame and rugged track assembly are built to stand up under tough working conditions. Effective bellows seals keep mud and dust out of track rollers and hold lubricants in. These and scores of other features enable the Cat D4 Tractor to do more work at less cost to the taxpayers.

Get the full details from your Caterpillar Dealer. He'll demonstrate the tractor on the job and show you actual cost figures that may surprise you. Every machine he sells is backed by good service and genuine parts. Call him today.

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NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE

AMVIT-JOINTED CLAY PIPE IS WATERTIGHT

MAIL BAG (continued)

(See also "More Letters to The Editor," page 187)

ing the installation of fly-ash removal equipment that increases the over-all cost approximately 15%. Fort Lauderdale was fortunate enough to have a plant site located in an area where air pollution presents no problem. Furthermore, to improve operations from an air-pollution standpoint, Philadelphia designs combustion chambers that are approximately twice the size of the Fort Lauderdale chambers.

To meet the requirements of around-the-clock operations six days a week, we find it necessary to use instrumentation and automation to the fullest extent; whereas small cities can get by with a minimum use.

There are other reasons for this low price. Nevertheless, Fort Lauderdale has succeeded in constructing a new plant at a remarkably favorable price and should be proud of it.

ABRAHAM MICHAELS
Chief of Refuse Disposal
Philadelphia, Pa.

Requirements of a Good Housing Code

This letter is to express my hope that you will find it possible to publish in your excellent periodical, THE AMERICAN CITY, the address on "The Requirements of a Good Housing Code," presented before the National Association of Housing and Redevelopment Officials on April 28, by Ralph J. Johnson, of Washington, D. C.

It has been my good fortune to be associated with Mr. Johnson during recent years when he was Chief of the Division of the Hygiene of Housing in the U. S. Public Health Service in Washington. I might say, also, that when Mr. Johnson and I served several years ago as members of Professor C-E. A. Winslow's Committee on the Hygiene of Housing of the American Public Health Association, we had a close working relationship in the drafting of the proposed model city housing ordinance put out by that committee under the sub-chairmanship of Dr. E. R. Krumbiegel, the distinguished City Health Officer of Milwaukee.

What seems to me to be the most useful and helpful element in Mr. Johnson's recent address is its very practical down-to-earth nature.

In recent months I have noted with great interest the steps that are being taken on a community basis in Richmond, Philadelphia, and other cities to apply law enforcement for the control of blighted areas. In each instance I think of the assistance given to our Health Department by Ralph Johnson and his associates on the U. S. Public Health Service. Much of his wise guidance will be found summarized in the address he gave to the gathering in New York on April 28.

HUNTINGTON WILLIAMS, M.D.
Commissioner of Health
Baltimore City Health Department

Editorial Note: THE AMERICAN CITY is glad to act favorably on the foregoing suggestion. See article beginning on page 147.

"Look-Alike Houses" And Private Rights

A point of concern to me recently has been the fact that many communities are rushing to get on the band-wagon in adopting ordinances against "look-alike houses." While I certainly do not defend most of the development housing that has been built in the past several years, I am very much distrubed by the infringements against private rights that are being arbitrarily enacted and enforced by many localities. It appears that if this trend continues, we shall be faced with a real danger of some legislative remedial action that can destroy much that we have gained in the field of planning.

Look-alike houses are definitely a problem, but are something that must be coped with by cooperative endeavors, and not by strong-armed ordinances enacted without sufficient study and background to permit their meeting the test of reasonableness.

HERBERT H. SMITH
Community Planning Associates, Inc.
Princeton, N. J.

A Letter from New Orleans' Director of Utilities

Your April issue (page 199), contains a brief reference to the "Report of the Governor's Commission on Urban Mass Transportation in Wisconsin." This item has certain erroneous information on the mass transit system operating in the City of New Orleans. It states ". . . An other example given was the City of New Orleans where, in spite of the maintenance of very low fares on the city-owned transit lines, passenger use declined in the same way that it had in cities where fares had been raised."

Firstly, the transit system in New Orleans is not city-owned. It is owned and operated by New Orleans Public Service Inc., a private utility company, which also sells natural gas and electricity within the city.

Secondly, while passenger use has declined in New Orleans, the rate of decline, I believe, has been much lower than that of other cities of comparable size. The following statistics are presented to substantiate this statement:

Year Ending	*Cash Passengers*	*Rate of Decline*
12/31/47	148,742,254	.....
12/31/48	145,971,319	1.9%
12/31/49	141,593,475	3.0%
12/31/50	131,300,654	7.3%
12/31/51	126,063,290	4.0%
12/31/52	125,172,724	0.7%
12/31/53	123,214,125	1.6%
12/31/54	120,709,267	2.0%

Your readers may also be interested to know that the City's Transit Traffic Index for the year 1954 is 164, using the average annual cash passengers for the period 1936-1940 as a base equal to 100. (Average annual cash passengers for 1936-1940 were 73,453,110). In comparison the nationwide Transit Traffic Index for December, 1954 was 97.37 for cities in the 250,000 to 1,000,000 population range (Taken from 1/28/55 issue of *Passenger Transport*). New Orleans, therefore, is approximately 67 per cent above the national average.

Undoubtedly, the low fare of 7 cents, with transfer privileges, plus the frequency of service which the company has been able to maintain are the principal reasons that our rate of decline has been less than that of other cities. The low fare is the result of a unique franchise under which the company operates. All three operations of the company, namely, transit, gas and electricity, are grouped together as a single operation in computing the company's net earnings. In this manner any losses which might be sustained by the transit department are offset by gas and electric department profits.

PAUL L. RISTROPH
Dir. of Utilities, City of New Orleans

AMVIT JOINTED CLAY PIPE IS WATERTIGHT
PREVENTS *Costly Ground Water Infiltration*

Municipal Authority of the
BOROUGH OF BETHEL, PENN.

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The Chester Engineers

Contractor
Diulus Construction Company, Inc.

"Now, for the first time watertight sewer lines are economically feasible. Ground water infiltration can be controlled and prevented," says E. T. Davis, Partner, The Chester Engineers, Pittsburgh, Pennsylvania. "We selected Amvit Jointed Vitrified Clay Pipe on an 8-inch sanitary sewer line for the Municipal Authority of the Borough of Bethel, Penn., because the Amvit Joint proved infiltration proof."

The Amvit Joint is a true mechanical joint, based on the ball and socket principle. The diameter of the spigot ring is somewhat larger than the largest diameter of the bell ring. When the two ends are pushed together the rings are in constant compression of more than 22 psi. Water cannot force its way in or out.

Prevent costly infiltration. Stop pumping and treating thousands of gallons of ground water. Amvit Jointed Clay Pipe is infiltration proof and root proof.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

Testing Amvit Jointed Clay Pipe are from, (L. to R.) E. T. Davis, Partner, The Chester Engineers; Joseph Diulus, President, Diulus Construction Company, Inc.; C. K. Strob, Partner, The Chester Engineers; and Tracy Price, American Vitrified Products Company.

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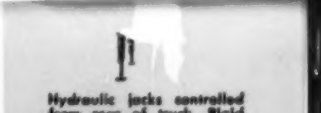


Hydraulic jacks controlled

Parks & Playgrounds

Edited by JOSEPH PRENDERGAST, Executive Director, National Recreation Association

Getting Playground Areas in New Developments

ONE of the knottiest problems facing many city officials today is what to do about securing public park and playground space in new developments. As housing construction continues at an increasing rate, more and more communities are establishing firm policies on the contribution of land for park and playground use by developers and subdividers.

Fast-growing ***Roseville, Mich.,*** is the latest community to adopt a policy to clarify future use of deeded land or monetary gifts for any parks or recreation purpose.

In the past five years Roseville's population has more than doubled from the 1950 Census count of 15,000 to an estimated 35,000. More than 5,000 homes have been built during this period. The value of building permits issued during the first three months of 1955 was $2,856,532 compared with a total of $1,270,495 during the first three months of 1954.

Late in March the Village Commission passed a resolution declaring that whenever an offer of a gift for recreation and park purposes is made, preference will be given to real estate rather than money. When sufficient land for recreation is already located in the vicinity of the new development, a monetary grant in lieu of property will be accepted.

Monetary Gift Fund

Any monetary gifts for recreation purposes, unless otherwise designated, will be placed in a recreation capital improvement fund, and the Village Commission will accept the recommendation of the Recreation Board as to the expenditure of any such monies.

Commenting on the new policy, Bernie Ballantine, Roseville recreation director, said he believed the Commission's action was wise and would materially help the community.

In the future, property deeded to the village for recreation purposes must be, whenever possible, in the locality of the proposed new development unless there is sufficient property already available in that particular area. In such case, the village will accept a monetary grant instead.

During the past 18 months Roseville builders have donated $2,000. One firm contributed $1,000 and also offered at the time of acceptance of its plat for approximately 200 homes, to donate another $6,500 for parks and recreation use.

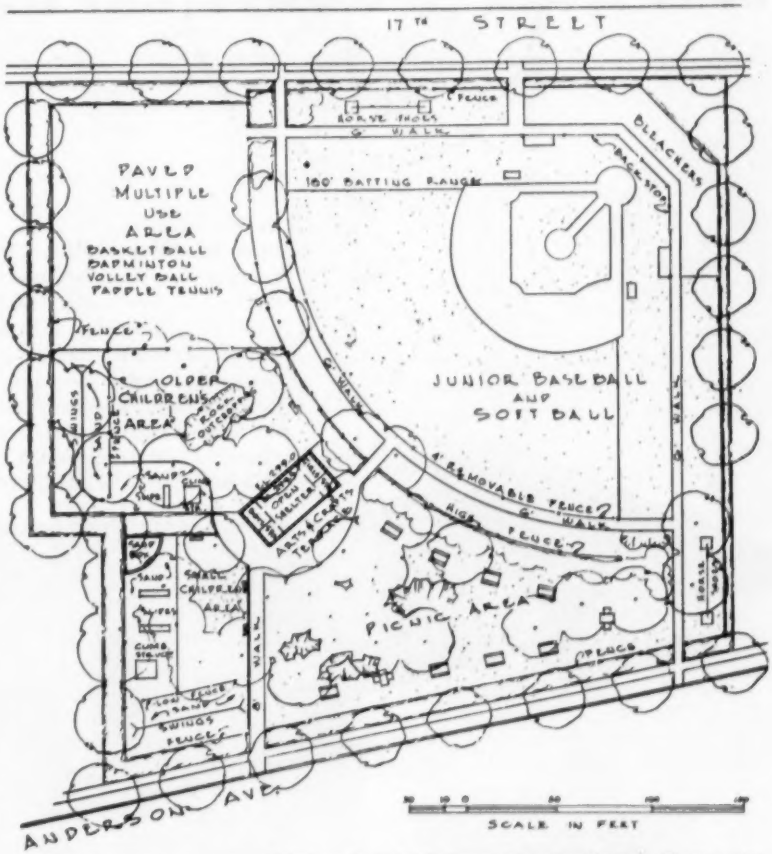
Reports on Other Communities

Some communities have passed ordinances or resolutions requiring the dedication of land for parks and playgrounds in all new subdivisions.

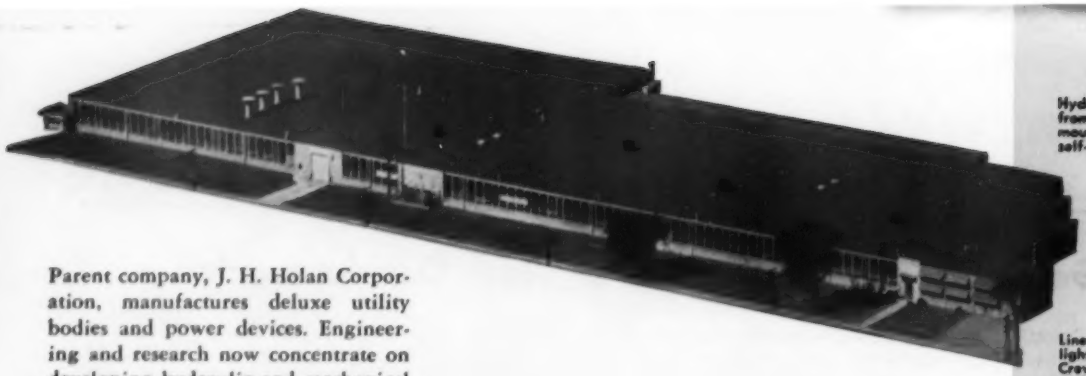
In 1939, ***Corpus Christi, Texas,*** required developers to dedicate 5% of their gross subdivision area for park purposes. In the beginning this system resulted in the dedication of a large number of small areas unsatisfactory from a recreational standpoint. Recently, however, the city has devised a plan whereby the developer may make a monetary contribution to a special park land acquisition fund, instead of dedicating the actual park area.

(Continued on page 221)

Good Plans Needed for Small Plots



Getting the most out of available park and playground land calls for effective site planning. This layout for a 2.6-acre playground in suburban Fort Lee, N. J., is an example of how to get the maximum functional use out of smaller-than-standard play areas. A minimum of four to five acres is the recommended national standard for a neighborhood playground. Where a smaller area is the only available playground location, however, individual site planning will assure maximum use of land.



Parent company, J. H. Holan Corporation, manufactures deluxe utility bodies and power devices. Engineering and research now concentrate on developing hydraulic and mechanical equipment for simplifying your work . . . platform-controlled aerial equipment, platforms, towers, derricks, borers, ladders, jacks. J. H. Holan bodies and equipment are available out of Cleveland and Griffin.

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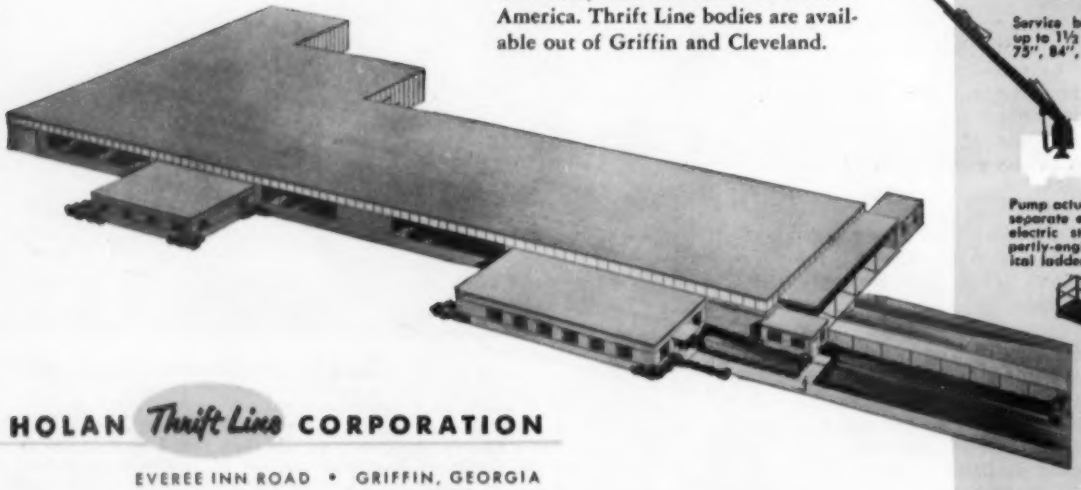

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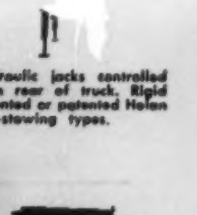
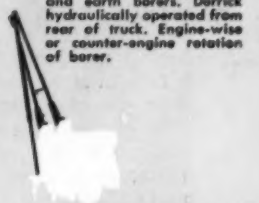


Hydraulic jacks controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

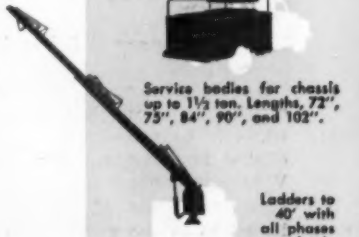
Light line construction bodies with power-operated, front-mounted derricks. Lift loads up to 6300 lbs.

Line construction bodies with rear-mounted derricks and earth borers. Derrick hydraulically operated from rear of truck. Engine-wise or counter-engine rotation of borer.



Hydraulic derricks designed for rear mounting. Capacities to 12,000 lbs. Also, light-duty, power-operated derricks.

Service bodies for chassis up to 1½ ton. Lengths, 72", 75", 84", 90", and 102".



Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter. Also, expertly-engineered mechanical ladders to 32'.

Hydraulic towers from 17' to 30' with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

Street Cleaning & Refuse Disposal

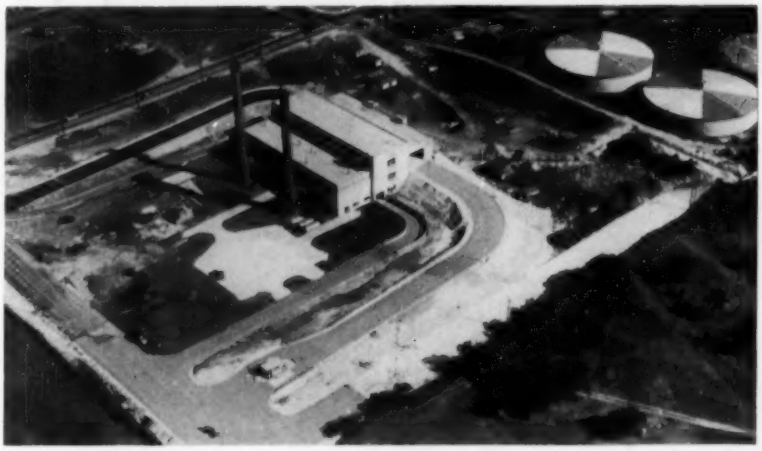
World's Largest Incinerator A Revenue Producer

MIAMI, FLA., has just made a $3,300,000 investment in better sanitation that is scheduled to bring dividends in several resourcefully different ways. To Waste Superintendent Grady Phelps, the incinerator's 900-ton per day capacity means that he no longer need worry about those peak loads that have caused him so much trouble in the past. This capacity, incidentally, makes the incinerator the largest in the world.

To Director of Service Ray Williams, the fly-ash removal features of the plant mean that roughly 45 cubic yards of fly ash no longer will dim the luster of Miami's sun-drenched atmosphere. To City Manager Edward A. Evans, the $100,000 per year that it will earn by generating steam for the Jackson Memorial Hospital and for the city's Department of Water and Sewers, plus the $110,000 that Miami Beach will pay to dispose of its refuse in the incinerator should permit him to pay for the incinerator out of earnings rather than taxes.

In all, Mayor Abe Aronovitz and members of the Miami City Commission had ample reason to feel grateful when they accepted the incinerator from C. W. Nichols, Sr., whose firm, Nichols Engineering and Research Corporation, of New York, N. Y., built the big project.

The plant uses a storage pit to receive the refuse, allowing the plant to operate around the clock on a seven-day per week schedule. The boilers that generate the steam also cool the gases and thus encourage the fly-ash to drop out. However, the hot gases may also be bypassed to a baffled spray chamber to remove more of the fly-ash, should it be desirable. When this is in operation, the incinerator stack will discharge a light plume of water vapor.



The world's largest incinerator goes into operation in Miami, Fla. The water tanks (right) are kept filled by pumps that are powered with incinerator-generated steam.

The plant has a carefully developed access and exit roadway system to eliminate traffic congestion, and provides interior parking spaces for 30 trucks. The design allows the superintendent to oversee all operations. From his office, he can control the feed to each of the furnaces, and regulate the burning rate, forced-draft fans, and boilers.

The incinerator was designed and its construction supervised by Maurice H. Connell and Associates, Inc., Miami consulting engineers. The 10-acre site has been landscaped under the direction of P. R. Plumer, superintendent of the city's nursery. He chose large trees—about 30 royal palms and some rubber trees—to give a proper setting to the big building. Small, colorful flower beds flank the roadway leading to and from the plant.

The plant dedication was held on March 24 of this year.

Tree Sprayer Turns Leaf Blower

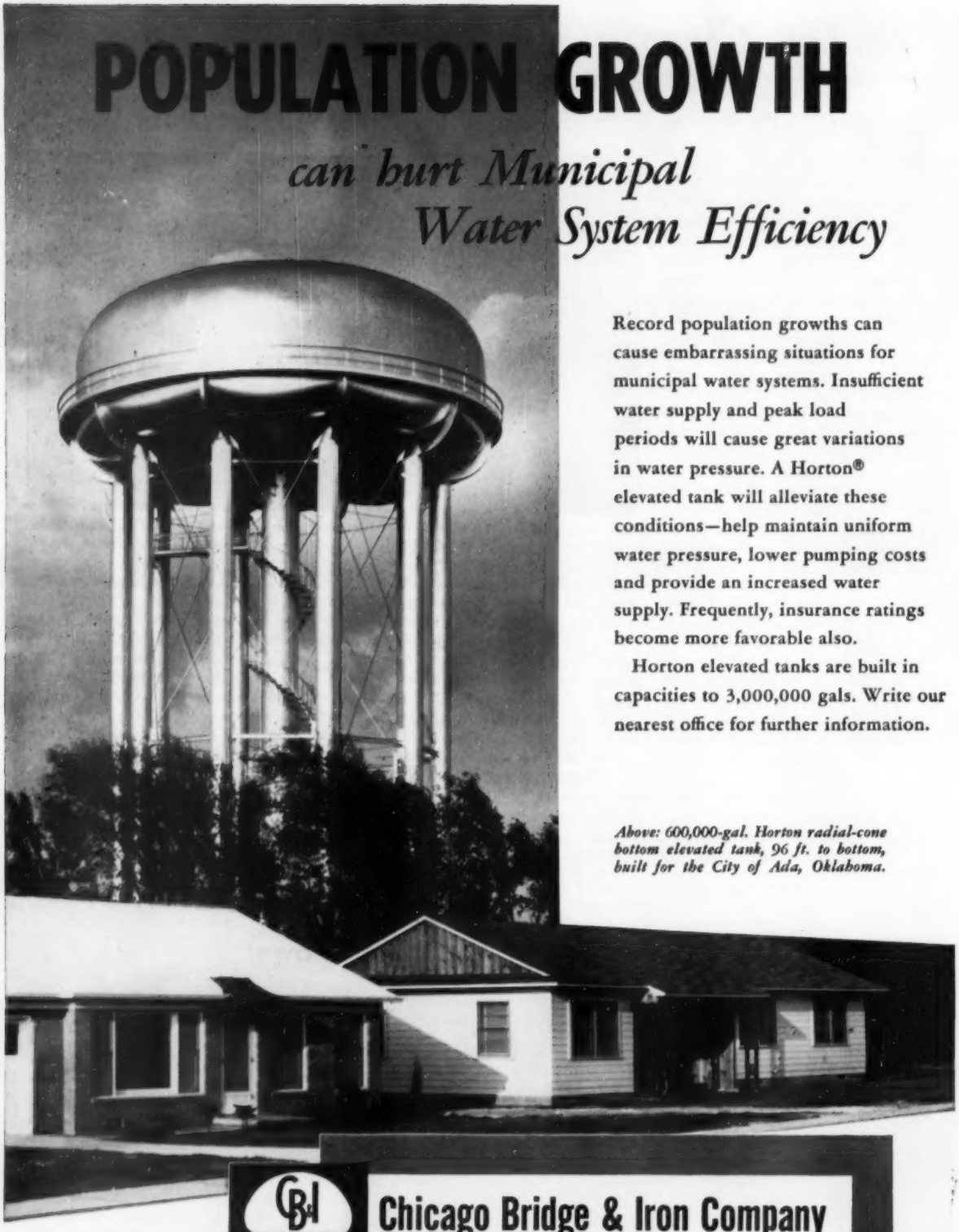
Leaves hurry into windrow formation, urged by a 120-mph blast from this mist blower.

A MIST blower, tractor, and two men will do just about as good a job of gathering leaves as 20 men with rakes. So found Burt D. Ferris, superintendent of grounds at Michigan State College, East Lansing.

The machine he uses is a Bean Rotomist sprayer, purchased originally to spray the campus trees. However, its 120-mile-per-hour blast is able to blow leaves into a windrow, and is especially useful in clearing them from under shrubs and low-hanging branches where men have difficulty when working with rakes. With the blower, two men—a driver and an operator—can clear about a 50-acre area in an eight-hour day.

POPULATION GROWTH

can hurt Municipal Water System Efficiency



Record population growths can cause embarrassing situations for municipal water systems. Insufficient water supply and peak load periods will cause great variations in water pressure. A Horton® elevated tank will alleviate these conditions—help maintain uniform water pressure, lower pumping costs and provide an increased water supply. Frequently, insurance ratings become more favorable also.

Horton elevated tanks are built in capacities to 3,000,000 gals. Write our nearest office for further information.

Above: 600,000-gal. Horton radial-cone bottom elevated tank, 96 ft. to bottom, built for the City of Ada, Oklahoma.

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Water Supply and Treatment

Water Use Doubles in Michigan

PER CAPITA use of water in Michigan has doubled in the past 35 years and can be expected to continue to increase, according to a survey completed recently by our organization. The study covered 123 of the state's 400 separate water departments or authorities that service villages, cities, or districts whose populations range from less than 1,000 to over 2,000,000. These utilities provide water for the majority of the state's population.

Returns from 123 communities indicate that 80% of the state's population is served water from a central pumping plant, the remainder from private wells and pumps.

Estimated investment in both public and private water supplies is $575,000,000, of which $450,000 is invested in supplies under the jurisdiction of water departments or commissions.

Pumpage, in terms of gallons per day per capita, varied from a low of 13 to a high of 690; the weighted average, based on population, is 153 gallons.

Daily Per Capita Usage

Quantity of Water (in gallons)	No. of Communities
Less than 50	6
50 to 99	32
100 to 149	27
150 to 199	26
Over 200	16

Communities having the lower per capita pumpage are predominantly residential with very little, if any, industry. Those communities recording above 200-gallon pumpage are either largely industrial or feature some large industry that requires large quantities of water.

Anticipated increase in per capita use will be created by use of air conditioners, garbage disposers, automatic dish and clothes washers and drying machines, additional shower baths, and greater use of water in industrial processes.

For an excellent index to the future water requirements of a particular community, city officials can be guided by the trend of the per capita use of water in that community noted over a period of years.

The ratio of meters and number of customers shows that metered service is popular in large communities. A tabulation indicates that cities with over 11,000 persons were more than 96% metered; smaller ones averaged 74%.

Ratio of Meters to Customers

City's Population	Meters Per Customer
Over 60,000	1.01
20,000 to 60,000	.998
11,000 to 20,000	.969
7,000 to 11,000	.740
2,000 to 7,000	.920
Under 2,000	.740

Value of all meters installed, based on today's meter prices, is $30,000,000. Based on the average life of the meter before replacement and on the addition of new customers, it is estimated that $2,000,000 of water meters are being purchased each year in Michigan.

Average revenue per 1,000 gallons pumped into the distribution system was fairly uniform regardless of population, per capita use, or extent of metering.

Average Revenue Produced

City's Population	Income per 1,000 gallons
Over 60,000	$ 0.1672
20,000 to 60,000	.1479
11,000 to 20,000	.1532
7,000 to 11,000	.1456
2,000 to 7,000	.1447
Under 2,000	.1831

The weighted average for the 123 communities is 16 cents per 1,000 gallons. The total amount of water pumped annually by all water departments is estimated at 310,000,000,000 gallons and the total revenue at $50,000,000.

Smaller systems have to make a greater capital investment per dollar of revenue earned.

Average Investments

City's Population	Investment per $1 of Revenue
Over 60,000	$ 8.32
20,000 to 60,000	8.68
11,000 to 20,000	8.97
7,000 to 11,000	7.63
2,000 to 7,000	10.61
Under 2,000	11.88

The weighted average of all systems is $9. When this factor is compared with the amount of capital required for other businesses in any community, it is readily seen that great care should be exercised in planning additions to water-works systems.

CLAUD R. ERICKSON
Mechanical Engineer
Board of Water and Electric Light Commissioners
Lansing, Mich.

Cloud Seeding Helped

CLOUD seeding has made a big difference in the Oklahoma City water supply, according to M. B. Cunningham, superintendent of water. Last year, the city entered into a contract with Dr. Irving P. Krick, meteorologist, of Denver, Colo. His report revealed that the city received 75% to 100% of normal precipitation on most of its watersheds as a result of his operation. Based on conditions in areas not receiving the effects of cloud seeding, the city would reasonably have expected only 50% of normal precipitation.

During the term of Dr. Krick's contract, the city's river changed from a dry to a flowing stream, affording the city with 29,700 acre-feet of water; the flow then continued during the following month, bringing the total to 46,996 acre-feet. This is nearly double the flow received the year before when cloud seeding was not attempted.

Chardon, Ohio solves water problems

WITH A

BJ SUBMERSIBLE

Difficult problems overcome—yet water costs only 3½ cents per 1000 gallons!

The town of Chardon (pop. 2,478) in Gauga County, Ohio, faced these difficult problems in solving a primary water supply pump selection:

1. The proposed pump site was a flood area.
2. The site was on the town's golf course where unsightly structures or pump houses could not mar the landscape.
3. The pump installation would be 1½ miles from the overhead water tower.

RESULTS TALK!

The Chardon Board of Public Affairs worked with Byron Jackson Co. engineers. A 30 horsepower BJ Subette, capable of pumping 250 gpm against a head of 360 ft., was installed in a simply-constructed pit in the marshy area. Unseen and completely submerged, this single Subette pumps one-half of the town's water supply. It eliminated the need for an unwanted and expensive pump house and solved the dangers of flood-out during high water periods. In addition to solving these difficult installation requirements, the BJ Subette is pumping water at an operating cost of only 3½ cents per 1000 gallons!

The BJ Subette answers primary water supply and booster pumping needs of the smaller municipal user. For larger cities, BJ Submersible models are available in capacities to 20,000 gpm and heads to 1800 ft.
Write for complete information

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Street Construction & Maintenance

A Big All-Purpose Machine For a Small City

About twice a week Red Springs' grader goes to work to trim and cover the accumulation of refuse at the dumping grounds in a manner similar to that on a sanitary fill.

RED SPRINGS, N. C., with a population of 2,250 persons, sets an example for small communities that need the kind of equipment that can perform a variety of jobs. Cities of the size of Red Springs can't justify financial outlays for expensive machines that can be used only periodically for special jobs. Multiduty performance is mandatory.

One machine that Red Springs owned was a motor grader that did most of the work of maintaining unpaved streets. But there were many more tasks in the city that required the economy and speed of mechanization. Sand, gravel, dirt needed to be picked up; the dump was no civic asset. Nevertheless, the city struggled along because of the prohibitive cost of buying special equipment for these jobs.

However, not long ago, news came of a motor grader that is equipped with a scarifier and a rear-end loader. It could grade streets, load earth, gravel, and sand, and give the city dump the semblance of a sanitary fill.

The loader-grader is an Allis-Chalmers Model D. Its work on the town dump does not meet the specifications for a sanitary fill, but the area displays a definite improvement. The municipality also operates a 9-yard Gar Wood Load-Packer that makes about 15 weekly trips to the dump. A 4-yard dump truck picks up trash about eight times a week. Twice each week, the Model D grader suspends its street work and proceeds to the dumping ground where it levels, compacts, and covers the refuse before going on to other city jobs.

W. D. HINES, *Town Clerk*
Red Springs, N. C.

After a spring rain the Allis-Chalmers Model D grader has plenty to do, particularly on a street like this one where a sewer excavation and backfilling job was just completed.

Street-car tracks are fast disappearing in the current paving program in Cincinnati.

Two Pavers Needed

CINCINNATI is putting two bituminous pavers to work to handle the 700,000 square yards of street surfacing planned for the current season. One-third of the entire program will involve final covering of old street-car tracks. The city has one Barber-Greene bituminous paver and is acquiring a second paver for this program. A. Lahrman, assistant engineer, reports that the city uses Ohio state specifications T35 and T50 for the surfacing, applying it in a thickness of 1½ inches for the full width and an average of 1 inch over the track area.

Cincinnati also is surface-treating 1,200,000 square yards, using a Littleford asphalt distributor and a special self-propelled aggregate spreader.

Why is the fireman always poking at the fire today?

We have a new lot of coal and it clinkers badly. He's digging the clinkers out and covering up holes in the fuelbed.

Don't holes in the fuelbed make clinkers?

They sure do! And the air required for combustion goes through these holes and we can't keep the steam pressure up.

Why did we buy such coal?

Well, it was a few cents cheaper and we didn't consider the analyses so nobody realized it had such a low clinkering temperature.

So we save pennies on the coal and blow dollars up the chimney!

Yes sir! That's about the size of it. But just as soon as this lot is used up, we're going back to the old coal. That was specified for us by the Chesapeake and Ohio Fuel Service Engineers to give us the lowest *steam cost* with our type of stoker and boiler. We should have stuck with the coal they recommended – it never gave us a bit of trouble.

P.S.

There's a lot more to buying coal than the cost per ton. For facts and figures to solve your particular fuel requirements, write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake & Ohio Railway Company, Terminal Tower, Cleveland 1, Ohio.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL

Our Municipal Notebook

New York's Governor Urges More Rational City-State Relationships

Excerpts from an address by Governor Averell Harriman before the United States Conference of Mayors, May 19, 1955:

"For years, a goal of municipal administrators has been 'home rule' —to get out from under state control. Basically, this objective has been and remains right. But it seems to me that how we apply this concept needs to be re-thought, now that so many of our severe problems spread across agglomerations of urban communities clustered together in metropolitan areas.

"The state still should avoid needless interference in local affairs, yes, but it also needs to exercise leadership on those problems which overlap city boundaries and assist the cities and their adjoining suburbs to initiate and carry on some of the new required programs. That compels state-city cooperation to a higher degree than we have yet seen. On the part of the state it calls for some degree of reorientation from a rural to an urban focus. On the part of governors, legislators and mayors it calls for a new disposition to cooperate and work together.

"History is going to judge this generation of public officials by the way in which we anticipate the problems that are coming."

Luther Gulick Proposes New Form of City Income Tax

ATTACKING the bulk of existing municipal nonproperty taxes as "socially inequitable, administratively expensive, and economically harmful," Luther Gulick, City Administrator of New York City, called on cities to use personal income taxes as a more effective way of raising additional local revenues in the future. The proposal was made to more than 600 mayors and other city officials attending the annual meeting of the United States Conference of Mayors held in New York City May 19-21. Dr. Gulick said that he did not mean the kind of payroll tax being used in Philadelphia and other cities in Pennsylvania and Ohio, since this tax presents collection difficulties. Instead, he proposed a tax that would be levied as a supplement to a state income tax, collected by the state, and returned to the municipalities imposing the supplement.

Dr. Gulick made three additional financial proposals. These were: (1) that the federal and state governments relieve the cities of such burdens as the provision of public relief, (2) that direct charges for certain municipal services be employed to a far greater extent in the future, and (3) that electronic computing and data analysis equipment be used to improve the fairness and effectiveness of the property tax.

In proposing that the responsibility for public relief be handed over to the federal and state governments, Dr. Gulick reminded the mayors that "we learned in the last depression that localities simply cannot care for the economically stranded. In regard to the greater use of specific charges for services, Dr. Gulick singled out the provision of water supplies and the need to relate charges to costs. Here he said: "We need to be thinking about charges that will ration its use in accordance with its costs, as other utility services are rationed by the price system. Many jurisdictions do not even meter the use of water, but impose charges based on other factors, for instance, front-footage of property."

Dr. Gulick's remarks were received with great interest by the mayors.

Needed by 1965—More Than $200 billion of Local and State Construction

A WHOPPING TOTAL of over $200 billion of local and state public works construction will be needed by 1965, according to a former U. S. Department of Commerce official, Milford A. Edwards, writing in the May issue of *Construction Review*. In Mr. Edwards' opinion, "The public works backlog provides a strong stabilizing force for the economy in the next decade, and it must be substantially erased by 1965 if severe community problems are to be avoided." But, the article goes on to say, the 1965 needs won't be fulfilled unless annual local and state public works expenditures are stepped up more than twofold over the expenditures of recent years.

The future construction needs break down as follows: $92 billion for highway outlays (reduced slightly from the Clay Committee estimates to account for nonconstruction costs); $41.5 billion for school building requirements; $25 billion for new water and sewerage works; $22 billion for hospitals and other health facilities; and an estimated $23 billion for other public works such as general administrative buildings, recreational buildings, publicly owned electric light and power plants, local transit facilities, penal institutions, and parks and playgrounds.

REPRESENTATIVE MUNICIPAL BOND ISSUES

May 1 to May 14, 1955

Date of Sale			*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
5/4/55	Aurora, Ill.	$370,000	Swimming Pool	11 5/6	2.12
5/4/55	Denville Tp., N. J.	80,000	Sewer Assessment	4½	2.147
5/4/55	Galena Tp., Ind.	57,000	Building	8½	2.353
5/4/55	Pendleton, Ore.	20,000	Improvement	5½	1.96
5/4/55	Putnam Co., Ind.	450,000	Hospital	10¼	1.983
5/5/55	Brecksville, Ohio	57,250	Riverview Water Main Improvement	6¼	2.627
5/5/55	Lancaster, N. Y.	59,500	General Improvement.	5¾	2.388
5/5/55	Lawrence, N. Y.	100,000	Land Acquisition	10½	2.46
5/9/55	Bethel, N. Y.	12,000	Fire Dist. Equipment.	4¾	2.89
5/9/55	Port of Portland, Ore.	1,000,000	Airport	10¼	1.951
5/9/55	Seattle, Wash.	2,500,000	General Arterial Improvements	11½	2.19344
5/10/55	York, Pa.	425,000	Improvement	9½	1.697
5/11/55	Cambridge, Mass.	4,500,000	School Project	10½	1.834

Compiled from *The Bond Buyer*

minal Tower, Cleveland 1, Ohio.

AT EACH of the five Jones Company plants, Chlorine is received in tank cars, repacked in smaller containers selected to meet the customer's needs.

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You save searching time, too, because you have a *single* convenient and dependable source for *all* your Chlorine products—liquid Chlorine, Calcium Hypochlorite, and Sodium Hypochlorite.

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Top quality

Jones Chlorine is quality controlled to meet high government standards. Municipalities, public utilities and industrial users have relied on Jones Chlorine for a quarter of a century.

Dependable

We supply more municipalities than all other Chlorine packers combined.

Our trained technical staff will be glad to help you solve *your* Chlorine problem. Take the waste out of your Chlorine buying. Do it now! Write for prices.

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sylvania and Ohio, since this tax

Our Municipal Notebook (continued)

New High in Municipal Employment

THE BUREAU OF THE CENSUS has issued a report, *City Employment in* 1954, showing that city government employees and payrolls were at an all-time high in October 1954. An increase of 38,000 employees—or 2.7%—over October 1953 is reflected in the approximately 1,420,000 municipal employees who received $396,000,000 in wages and salaries during October 1954. Monthly payrolls for city employees rose $29,000,000—or 7.8%—over October 1953.

Average monthly earnings of full-time municipal employees amounted to $321 per employee in October 1954. The corresponding figure for October 1953 was $306 and for October 1952, $294.

More than one-half of all city government employees worked for the 106 cities having 100,000 or more inhabitants.

Among the services performed by municipalities, public education accounted for the largest single share of employment, despite the fact that in most cities public schools are administered by independent school districts and that the Census report includes as city employees public school personnel only in cities in which the municipal government administers the school system. Police protection services accounted for the next largest portion of municipal employment, while general administration ranked third and fire protection, fourth.

For Greater Municipal Home Rule

NEW YORK STATE Senator Thomas C. Desmond has issued a vigorous statement, warning that state controls are increasingly stifling our municipalities, and urging greater reliance on responsible home rule.

Writing in the April 24 issue of *The New York Times Magazine* in an article headed "The States Eclipse the Cities," Senator Desmond says, in part:

Our cities have gained maturity. But instead of recognizing what they can and must do for themselves, the states continue to pass laws interfering with them, often for reasons of spite. Legislators can punish opposing cliques, grant concessions and act as benign overlords or petty tyrants . . .

Even when states, out of the best of motives, substitute arbitrary regulations for local flexibility, the end result is often waste and sometimes danger. Because cities are required to accept "the lowest responsible bid" when buying material, they must often purchase machinery from a distant source which cannot service it, rather than from a near-by source which can. . . .

I do not propose that cities be cut loose to operate on their own. Local affairs are too intermingled with those of other levels of government for cities to become wholly autonomous. Arterial highways, control over courts, wage and hour regulations, annexation of land, war against communicable diseases — these are things which transcend local interest and call for state action. But if the delineation of state and local problems is difficult at times, it is hardly insuperable.

The standard should be this: what the states can do better than the cities should be done by the states; what the states and cities can do best together should be done jointly; what the cities can do better than the states should be done by the cities.

For Increased Reliance On Property Taxes

THAT steadily rising school costs, plus a dire need for more money to pay them, require a new look at property taxes, is the theme of an article by Arvid J. Burke, Director of Studies, New York State Teachers Association, published in the May 1955 issue of *The School Executive* magazine.

The author's purpose is "to demonstrate that there are definite advantages in seeking increased local property tax support during the years ahead, that a potential of increased property taxes does exist in many localities, and that a well-balanced school finance program will include improvements in the property tax. . . .

"The property tax has two great advantages," says Director Burke. "It is a substantial revenue producer and it is the most stable of all available revenue sources. It would be difficult to find a tax with an equivalent revenue potential for local government. Its administration and equity can be increased by reforms.

"To obtain both the financial support and the advantages of property taxes will require a positive school finance program in most states, aimed at correcting existing weaknesses and injustices. Such a program would list these objectives:

1. modernizing property tax laws
2. removing arbitrary and archaic property tax limitations or at least basing them upon current market values of property
3. reforming assessment practices or at least having a scientific reassessment of property
4. modifying state aid laws to avoid penalizing local units which reassesses property
5. abolishing state property taxes
6. allocating local non-property taxing powers to larger local units of government in lieu of property taxing powers
7. increasing the property taxing powers of the smaller local units of government like school districts
8. reorganizing small school districts into stronger local tax units
9. providing for the payment of property taxes in smaller installments without penalties
10. providing a satisfactory state equalization program for school support to avoid excessive local property tax burdens.

"Thus, property taxes can finance a large part of the increases in local school government costs to a degree which varies in each local district according to specific local factors. Further, the rise in personal income and in personal income taxes since 1940 has opened up property tax as a more attractive means of school support—a means which is necessary in most states."

State Aid Proposed to Build Schools

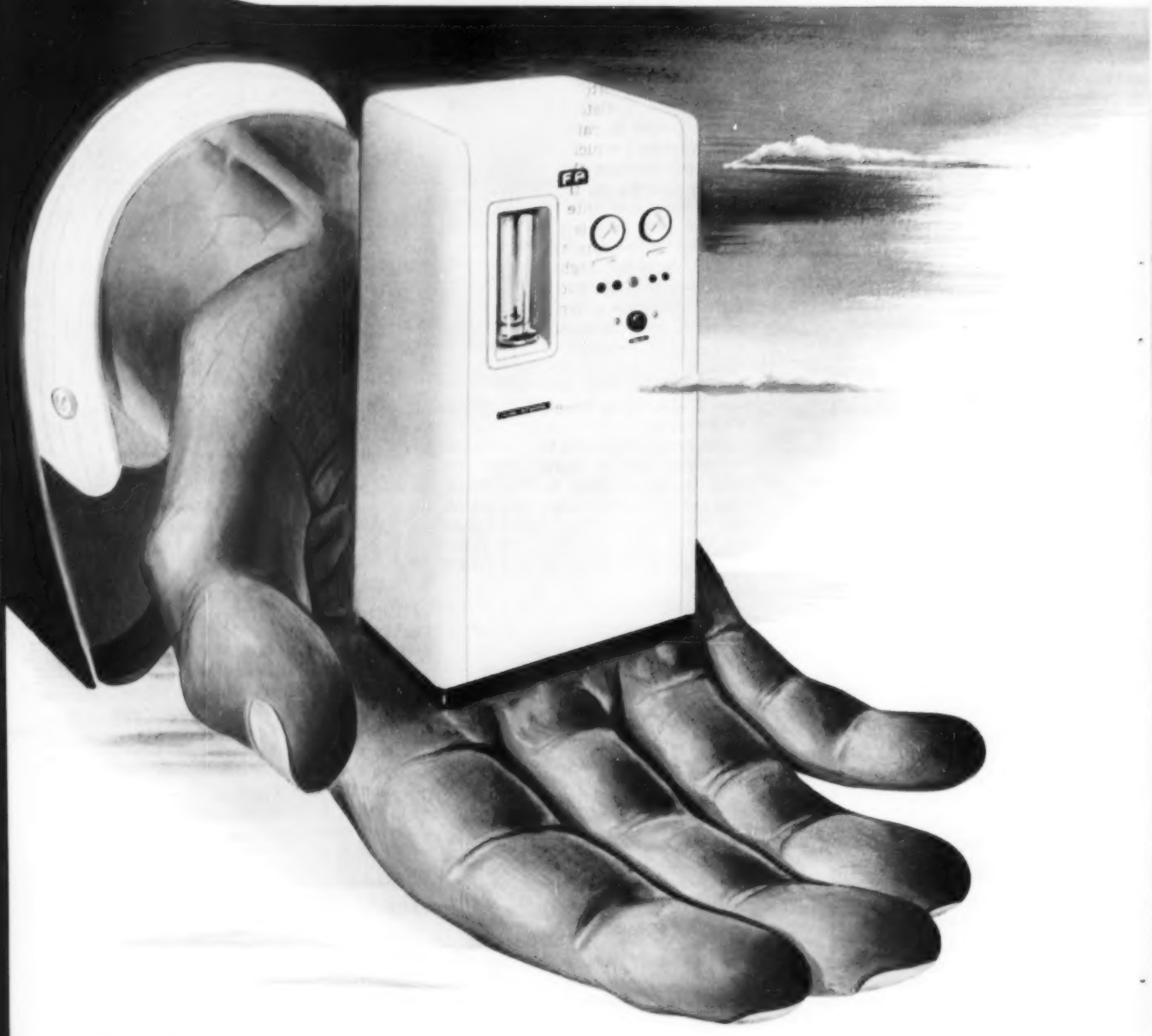
A DOUBLE-BARRELED program by which the State of New Jersey, for the first time, would take a direct part in sharing local school construction costs has been proposed to Governor Meyner and the Legislature by the Commission on State Tax Policy.

As summarized by the *Newark Evening News* of May 2, the program contemplates:

• Annual grants in aid to local boards of education for school construction costs. The size of the grant would depend on the number of pupils in the school system and the amount of the district's taxable property. Estimated cost of such grants

(Continued on page 23)

YOU'VE TRIED THE OTHERS AT YOUR EXPENSE
NOW TRY THE F&P CHLORINATOR



. . . AT MY EXPENSE

"Because there are so many good and valid reasons why our Chlorinator merits your deep consideration, I'm signing this advertisement. I am Kermit Fischer, President of Fischer & Porter Company.

Fischer & Porter Company has been in business since 1937, making chlorine control systems for all of the eighteen years since then. In 1949, after years of experimentation and development, we put our first 'packaged unit' chlorinator into service at Winter Park, Florida waterworks — where it has been operating successfully ever since. In May of 1952 we retooled our chlorinator production, incorporating into our basic design all the improvements made possible through the experience gained at Winter Park and some fifty other installations. Now there are more than 1000 of the new model F&P Chlorinators in daily use—and all our customers tell us it is the best chlorinator they have ever used.

HERE ARE SEVEN REASONS WHY I CAN MAKE THIS GUARANTEE OFFER TO YOU WITH CONFIDENCE . . .

1. SAFEST . . . The F&P Chlorinator is completely safe because it uses instantaneously operating mechanical instrument type safety devices. Any malfunctioning shuts off the chlorine supply instantaneously—but the chlorinator automatically starts operating again when the trouble has been corrected. There are no bell jars—exposed or otherwise—with water seals, so there are not the time delays these outmoded components introduce to the safety system.

2. MOST DEPENDABLE . . . Many F&P Chlorinators have operated for over a year at a time without being shut down for any repairs or replacement parts or for cleaning. Even connecting chlorine to the water inlet and water to the chlorine inlet did not faze one customer's chlorinator. After the connections were reversed, the chlorine system sucked itself dry and the chlorinator started up automatically.

3. MUCH LOWER FIRST COST . . . Simplified design, mass production methods, *mechanical* principle of operation, modern instrument engineering, make it possible to supply the new F&P Chlorinator at far lower first cost than the old hydraulic bell jar chlorinators.

4. MUCH LOWER MAINTENANCE COST . . . Not one, not a dozen, but *every* present user of F&P Chlorinators has stated unequivocally that the F&P Chlorinator cuts the maintenance bill to nil—whereas formerly maintenance cost was a major item.

5. NO CORROSION, NO SCRAPING, NO PAINTING . . . Because the cabinet is made entirely of fibre glass—without any internal metal bracing—it cannot corrode, does not have any paint or other finish coat to be renewed. *All* the internal parts are also completely resistant to attack by chlorine, by water or wet mixtures of the two so there is nothing to deteriorate, nothing to scrape, nothing to repair.

6. SIMPLEST TO OPERATE . . . The F&P Chlorinator is so simple that no skill is required either to operate or install. No foundation, no bolting. Just attach piping to the connections labeled 'chlorine,' 'water,' 'drain' and 'vent'—then turn on the chlorine and water valves (either one first) and you're off. Anybody can do it. Anything he does wrong (if he can find something wrong to do) simply shuts down the chlorinator.

7. PROVEN IN USE 1000 TIMES OVER . . . Sales of F&P Chlorinators have increased by leaps and bounds. Over 1000 present users are all saving money day in and day out.

These are provable and proven facts. We can give you every evidence you need of user satisfaction. But I still want you to make up your mind on the F&P Chlorinator, by actual test, *under your own operating conditions.*

All I ask is that you write to me now. Don't wait for repair bills or breakdown to start you thinking about better chlorination equipment. Merely tell me your chlorine capacity requirements, your ejector water supply pressure, your solution discharge pressure and I'll do the rest. You'll be under no obligation whatsoever. I stand on my faith in our Chlorinator. I know that it will win your enthusiastic support, that it will outperform any other chlorinator ever offered. All I ask is that you convince yourself—by trying it at no cost to you.

Will you write to me today—and ask me to prove what I say—*right in your own plant*—under your own operating conditions?"

Kermit Fischer
President.

complete process instrumentation

FP **FISCHER & PORTER CO.**

765 Fischer Road, Hatboro, Penna.

18 YRS. EXPERIENCE SUCCESSFULLY MANUFACTURING CHLORINE FLOW METERING EQUIPMENT

LA1014

WATER... guardian of the city

From earliest times, mankind has recognized water as the guardian of its safety. The medieval castle relied on its water-filled moat to discourage attack. Today, water is still man's first line of defense against disease and fire.

The vital pipelines which form this first line of defense are the prime concern of farsighted water works officials. More and more of them are turning to LOCK JOINT CONCRETE PRESSURE PIPE on the basis of time-tested performance. The danger of crippling the city's water supply and sanitary facilities through burst or ruptured pipe does not exist in Lock Joint pipelines. The pipe's initial high carrying capacity is permanent, assuring ample water and pressure to combat the hazards of fire.

With Lock Joint you can benefit from these advantages in a virtually ageless pipeline which will require very little, if any, maintenance.

LOCK JOINT PIPE COMPANY

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

(Continued from page 19)

for the first year of the program (1956-57) is $11,000,000.

● Loans to school districts for construction at an interest rate of 3.5%. Such loans would be made to the few districts which are forced to pay more than the rate on the open credit market. The state would float $15,000,000 in bonds from which to make such loans.

The grant-in-aid program, which is an innovation not only for New Jersey but also for the nation, is the core of the Commission's eighth annual report, the result of a year-long study. If implemented, it would be an extension of the revised and increased state aid program for school operation which was proposed last year by the Commission and enacted into law by the New Jersey Legislature.

Calls for Performance Budget in New York City

A PROPOSAL that New York City abandon its traditional line-item budget and adopt performance budgeting was voiced recently by a representative of New York's Citizens Budget Commission. Speaking at a public hearing on the city's 1955 budget recommendations, Harold Reigelman, Counsel to the Commission and one time mayoralty candidate, attacked the line budget as a mere list of monies that ignores the jobs to be done and the results expected. On the other hand, he said, the performance budget gives full information on the services to be performed, results to be obtained, and both unit and total costs. Beyond this, the performance budget promises greater opportunities for conserving the tax dollar, he said.

To institute the new system, Mr. Reigelman recommended that a special city administrative unit be established to develop standards of performance for all city functions. Once prepared, the standards could then be used as measures to determine whether the money appropriated in the annual budget was bringing reasonable results.

In explaining what he meant by standards of performance, Mr. Reigelman said:

> Consider the Department of Housing and Buildings. The department makes various types of inspections, as do many other departments. In elevator inspection, for instance, it is possible to develop standards as to what should be inspected, and the average time required to make a proper inspection. Then if we know the number of elevators requiring inspection, and the number of inspections that should be made each year, we can readily determine the manpower needs for this activity. Similarly, service levels and standards of performance can be developed not only for other types of inspections but for most other city activities.

Third Printing of Popular Free Film Folder

DUE TO an unexpectedly large demand from clubs, industries, and other community organizations, Association Films has ordered a third printing of its booklet, *Movies for Meetings*. It describes 53 16mm sound motion pictures, available for free loan. The films are offered to community groups as a public service.

Copies may be had by writing Association Films' executive offices at 347 Madison Ave., New York 17, N. Y.; or the company's regional film libraries in Ridgefield, N. J. (Broad at Elm), Chicago, Ill. (79 E. Adams St.), San Francisco (351 Turk St.), and Dallas (1108 Jackson St.).

Dispersal of Industry and Population Centers Urged by General Groves

AS A NECESSARY first step for defense against atomic attack, Lieutenant General Leslie R. Groves made this plea at the spring meeting in Baltimore of the American Society of Mechanical Engineers:

"One of the important things we can do is to disperse our industry and our centers of population so that there will be no key point of vulnerability. We do not have to destroy the kind of life we have in order to survive. If we take these problems in time—looking at the situation calmly, and without panic; realistically, and without fear—we can establish a defense that will be invulnerable to decisive attack, and the power of reprisal that will make the attack virtually suicide for the aggressor."

General Groves, wartime head of the Manhattan District nuclear bomb project, is now a vice-president of Remington Rand, Inc., Stamford, Conn.

George B. Bassett—1861-1955

GEORGE BARCLAY BASSETT, founder of the Buffalo Meter Co., died recently at his home in Buffalo, N. Y. He was in his 94th year.

Mr. Bassett was one of Buffalo's most distinguished citizens. He began his career there at the age of 25 when he and his brother, the late Edward M., started Bassett Bros., a company that designed and built 53 waterworks in western New York. Six years later, with a growing ambition to build a simpler, more practical water meter, he founded the Buffalo Meter Co.

Under Mr. Bassett's direction, the company has come a long way since its modest beginning in a third-floor loft. Today Buffalo meters are manufactured in a spacious plant on a 9-acre site at 2917 Main Street. They are used in more than 2,500 communities in the United States. In addition to water meters, the company offers all types of liquid meters, including oil and gasoline, and measuring apparatus for such materials as sulphuric acid, molten chocolate, and asphalt.

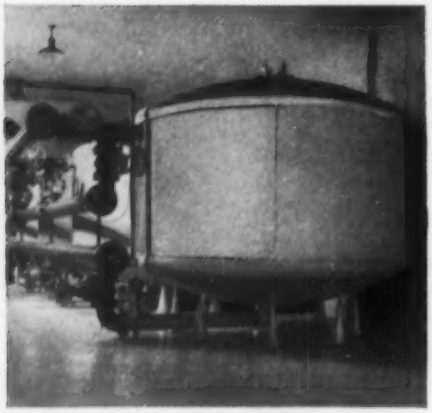
During World War II, the company made meters for more than 600 naval ships and over 1,000 commercial vessels as well as for war industries.

Born in Ballston Spa, N. Y., in 1861, Mr. Bassett attended public schools in Brooklyn and Watertown, N. Y. High school held little interest for him, however, and to avoid his studies he took a job in a Watertown drug store for the munificent sum of $3 a week. His engineering career began with Hinds & Moffett in Watertown, where he served as an apprentice. He later studied hydraulics and bridge building in the Sheffield School at Yale, and was made an assistant instructor in the junior class in land surveying.

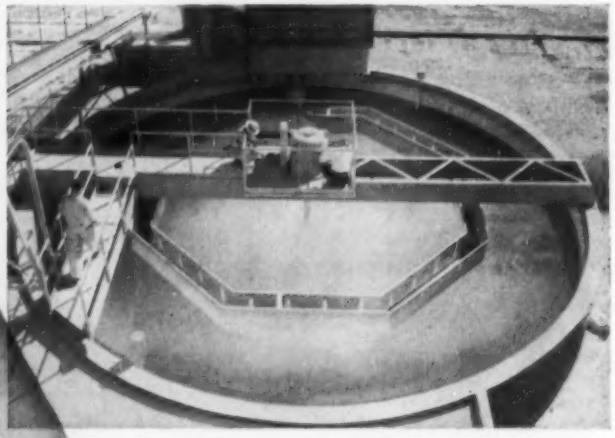
Mr. Bassett was a past president of the Engineering Societies of Buffalo and Western New York. He was a member of the City Planning Commission and a director of the Buffalo City Planning Association. For 30 years he was a director of the Children's Aid Society, and for almost the same length of time, he served as a director of the YMCA.

Surviving Mr. Bassett are two sons, Robert S., who is president of Buffalo Meter, and Charles K. Bassett, vice-president and secretary of the company. Also surviving is a sister, Mrs. Mary B. Harrington.

Why General Filter?



There are many reasons why municipalities and industries have installed General Filter water treating plants:



INSTALLATION SUPERVISION . . . General Filter "job-engineers" each installation to the consulting engineer's specification . . . supervises the installation and trains the personnel who will work with the equipment.

OPERATIONAL DEPENDABILITY . . . for twenty years General Filter has concentrated all of its efforts toward "better water treatment". Their efforts have produced water treating plants and equipment that are *completely* dependable.

ENGINEERING KNOW-HOW . . . General Filter's design and construction engineers are familiar with the problems involved in water treatment.

GREATER ECONOMY . . . the only real test of economy is a long term test. General Filter plants stand up over the years providing "better water" with minimum maintenance, longer trouble-free, smoother operation.

Find out why you should specify General Filter . . . Write today for detailed information regarding your water treatment problems.

General Filter Company
AMES, IOWA

"yours for better water treatment"

AERATORS • FILTERS • TASTE AND ODOR • ALKALINITY CONTROL • HIGH CAPACITY
RESINOUS ZEOLITE • IRON RUST REMOVAL • DEMINERALIZATION • SOFTENERS

Sewerage and Sewage Treatment

Activated Sludge Analyzed

ABOUT 300 engineers, educators, chemists, and other scientists gathered last April at Manhattan College, New York, N. Y., to discuss "Biological Waste Treatment" of both sewage and industrial wastes. They centered their attentions on the activated-sludge process, analyzing it with the thoroughness of a skilled mechanic examining a complicated engine. The meeting was sponsored by the College's Civil Engineering Department.

Functions of Aeration in Biological Systems

Professor Elmer L. Gaden, Jr., of Columbia University, explained that aeration fulfills three functions in biological systems: it provides a supply of oxygen; it eliminates volatile waste; and agitates. The first is the most important. The other two are often not well understood. The effectiveness of the oxygen supply is influenced by the suspended solids present in sewage as well as by many other factors.

The paper prepared by A. Pasveer, of the National Health Research Council, The Hague, Netherlands, pointed out that the oxygen supply regulates the effectiveness of activated-sludge treatment, and that temperature plays an unimportant role. H. W. Gehm, technical advisor for the National Council for Stream Improvement, went further by saying that the activated-sludge process demonstrated considerable stability when operated at high temperatures and at high and fluctuating pH values.

T. R. Haseltine, of The Chester Engineers, Pittsburgh, Pa., counseled against using one of the modified aeration methods when providing treatment less thorough than activated sludge. Instead, he recommended treating only a portion of the effluent from the primary settling tanks by the full activated-sludge process and then mixing the effluent with that of the remaining primary treatment effluent.

Range of BOD

Mr. Haseltine stated that, for good operation, the maximum BOD should not exceed 50 pounds per day per 100 pounds of mixed liquor solids. For small plants, he suggested a range of 24 to 30 pounds; for moderately sized plants, 30 to 40 pounds.

Sludge return, he added, should be adequate to prevent undue accumulation of sludge in the final settling tanks during periods of high Mohlman index. For guidance in the design of activated-sludge plants, he suggested the following points:

	Large Plants	Small Plants
Mohlman index	250	350
Concentration of return sludge	4,800 ppm	3,400 ppm
Mixed liquor return solids (100% return maximum)	2,400 ppm	1,700 ppm

Air requirements will vary from 435 to 1,600 cubic feet per pound of BOD removed. Air consumption remains relatively constant with a BOD of more than 35 pounds per day per 100 pounds of sludge solids. It increases rapidly with loadings below 25 pounds.

J. W. Hood, superintendent of the sewage-treatment plant at Ridgewood, N. J., pointed out in a carefully documented paper that foaming can and does occur when no detergents are present. He suggested that solids in the mixed liquor of less than 1,500 ppm may indicate conditions that induce foaming.

A new approach to the activated-sludge type of treatment was presented by A. A. Kalinske, director of development for Infilco, Inc., Tucson, Ariz. He discussed application of the Aero-Accelator, similar to the Accelator water treatment unit. Ideal activated sludge, it was pointed out, has to meet four basic requirements: it must provide a young, flocculant sludge; it must maintain growth by controlled wastage; there must be a continuous loading of organisms; and one must eliminate anaerobic conditions at every point in the oxidative treatment.

Details of a New Process

The Aero-Accelator, he stated, meets all these conditions. Sewage that has passed through primary settling tanks enters at the bottom center of the Aero-Accelator. Air, mixed by a rotor, is introduced to the sewage and lifts the sewage up the central draft tube. The mixed liquor flows down the annular space between the draft tube to the clarification zone. Activated solids are carried back beneath the hood by recirculation of the mixed liquor. The clarified effluent overflows through the clarification zone. The design permits the sewage to recirculate four or five times at its designed rate of flow.

Pilot-plant and prototype studies indicate an 89% and higher BOD removal for a BOD load of 150 to 350 pounds per 1,000 cubic feet of aeration volume per day. This compares with a standard of 30 pounds for conventional plants. The unit requires 550 cubic feet of air per pound of BOD removed at the 350-pound BOD loading. The conventional requirement is 1,000 cubic feet.

Professor C. N. Sawyer, of the Massachusetts Institute of Technology, reported that final settling tanks that can remove nitrifying sludge before rising of the sludge occurs can be expected to remove any sludge before significant deterioration develops. Density currents in the tank and the waterfall effect of the influent flow both oppose the removal of sludge at the center or influent end of the tank. Sludge will not flow by gravity, he said, but must be pushed by mechanical means because of the waterfall effect.

Compound biological treatment also was discussed by W. McPhee, of Malcolm Pirnie Engineers, of New York, N. Y. Compound biological treatment uses a high-rate trickling filter either ahead of or after the activated-sludge basins. This relieves the shock loads that will upset many activated-sludge plants. "Bioactivation," developed by Walker Process Equipment, Inc., he explained, is one of the compound biological treatment methods.

The meeting is an annual affair sponsored by Manhattan College's Civil Engineering Department. Professor W. Wesley Eckenfelder, Jr., was chairman, assisted by Brother Joseph McCabe and Professor Donald J. O'Connor.

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Day and Night, every hour of every day, your Municipal Fire Alarm System is ready to put trained men and equipment into *immediate action.*

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Public Safety

New York City Tests First Of Latest 25 Aerials

New York City firemen are shown testing the first of twenty-five 75-foot aerial ladders delivered in Long Island City, N. Y., by the Four Wheel Drive Auto Company, of Clintonville, Wis. Looking over the new FWD truck are (left to right) Alfonso Fiorella, Chief, Bureau of Personnel Administration; Edward F. Cavanagh, Fire Commissioner; Peter Loftus, Chief of Fire Department; and George H. Higginson, deputy chief in command of Transportation and Repair Headquarters.

Police Number 1.46 for Each 1,000 Persons

ALL cities in the United States with populations of more than 10,000 have an average of 1.46 policemen for each 1,000 persons—a slight increase in every population group over the past five years.

Statistics gathered for the 1955 *Municipal Year Book* of the International City Managers' Association show that the number of policemen for each 1,000 persons ranges from 1.39 in cities of 10,000 to 25,000 to 2.38 for cities over 500,000.

The number of police on traffic duty in United States cities with over 10,000 persons, ranges from the 2,253 traffic policemen in New York City to the one traffic patrolman reported by nine cities.

• • •

DAYTON, OHIO, city employees may hold outside jobs in spare time, according to City Law Director Herbert S. Beane in a legal opinion submitted to the city civil service board.

• • •

Station Wagons for Rescue Squads

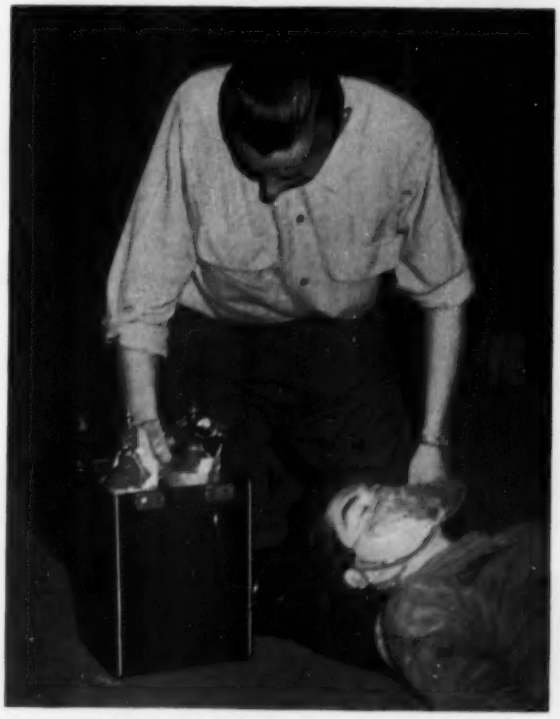
EVER since rescue squads have been a regular arm or unit of fire and police departments, the emergency vehicle has usually been a heavy truck—often the larger the better. Yet most of the emergency alarms involve light rescue operations. For instance, of the 47 emergency alarms in 1954 to the Austin, Texas, Fire Department, 9 were called "rescues" and the other 38 were resuscitator cases. This is probably common experience in many cities, even the largest.

A reorganization of the Emergency Service Division of the New York City Police Department increases on-the-street light-duty emergency service and reduces the number of heavy-duty truck units from 13 to 10, according to Police Commissioner Francis W. H. Adams. By transferring 18 patrolmen and 4 sergeants from heavy-duty truck units to emergency station wagons or emergency radio patrol cars, it increases active patrol coverage.

Six new Ford station wagons are being added to the 10 Fords that were already in operation. Pending the development of a full fleet of the emergency station wagons, conventional radio patrol cars continue to be used also for light-duty emergency patrol.

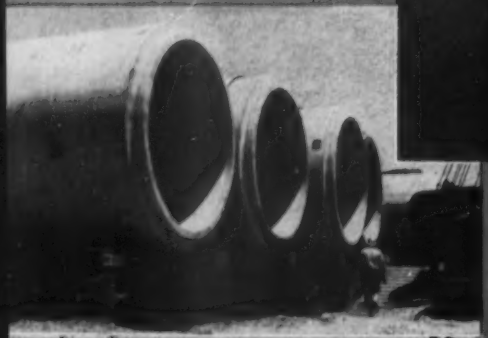
Timely Arrival of Respirator

AN inhalator unit called the Pocketaire was credited recently with saving a woman's life in Orange, Conn., according to *The Bridgeport Telegram*. A salesman for the Cycle-Flo Company, 986 Bridgeport Ave., Milford, Conn., manufacturers of this light-weight portable oxygen unit was demonstrating the equipment at the Orange Police headquarters when a victim of a heart attack was reported at headquarters. The salesman was rushed to the stricken woman's home and within five minutes after the inhalator was applied, she was breathing normally. The inhalator is designed for use in ambulances and by police and fire departments.



A Pocketaire inhalator unit sees action.

underground or underwater



Temporary trestle provides runway for gantry crane. Pipe sections are lowered into position through trestle.

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Main Offices and Plant: 4635 Firestone Boulevard, South Gate, Calif., District Sales Offices and Plants: Hayward, Calif. - San Diego, Calif. - Portland, Ore. Mail Address: P. O. Box 3428 Terminal Annex Los Angeles 54, Calif. - Phone LOgan 8-2271

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215	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320
216	223	230	237	244	251	258	265	272	279	286	293	300	307	314	321
217	224	231	238	245	252	259	266	273	280	287	294	301	308	315	322
218	225	232	239	246	253	260	267	274	281	288	295	302	309	316	323
219	226	233	240	247	254	261	268	275	282	289	296	303	310	317	324
220	227	234	241	248	255	262	269	276	283	290	297	304	311	318	325
221	228	235	242	249	256	263	270	277	284	291	298	305	312	319	326

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Street Construction and Maintenance Equipment

215 Self-propelled rollers for seal coat, resurfacing and standard-lift compaction jobs; 35, 50 and 100-ton rollers for "super-load" compaction; 9 and 13-ton rollers for base course compaction; and Sheepsfoot and Diamondfoot tamping rollers for heavy earth work, are available from the ROAD MACHINERY DIV., WM. BROS BOILER & MFG. CO., 1057 TENTH AVE. S.E., MINNEAPOLIS 14, MINN. Also a hot oil heater for asphalt circulation; an asphalt circulator and heater; and dual heat for asphalt heating, circulating and pumping. Literature on request.

Better Water Filters

216 Does your city's water plant need greater filter capacity? You can update your filter plants with dependable mechanical equipment designed for long wear and efficient operation. Get full information from the ROBERTS FILTER MFG. CO., DARBY, PA., a company backed by 60 years of successful performance.

Diesel and Gas Engines

217 Power Chief diesel engines are furnished in one, two and three-cylinder models ranging from 10-hp to 45-hp, and are available with stub shaft or clutch power take-off and as engine-generator sets. The gas engines, built as power units and generator sets in one and two-cylinder models, are rated at 18-hp and 36-hp maximum, respectively. Power Chief engines are described in *Bulletin* 239, from the NORDBERG MFG. CO., MILWAUKEE 1, WIS.

Cathodic Protection Combats Corrosion

218 Guard against corrosion and, at the same time, reduce excessive maintenance and replacement costs, the cathodic protection way. This company will engineer and install a complete cathodic protection system to preserve your water storage tanks, pipelines, filter beds, flocculators, clarifiers, and grit and sludge collectors. Write THE HARCO CORP., 17023 BROADWAY, CLEVELAND, OHIO.

Marking Traffic Lines

219 Self-propelled line markers and hand-propelled models—equipped to lay single or multiple traffic lines—in one or two colors—solid or intermittent—will handle every conceivable municipal marking job. There are models for marking your streets, roads, parking areas, recreation areas and loading zones. Smaller M-B markers can be used as portable paint spray units. For the latest catalog on *Traffic Line Markers*, write the M-B CORP., NEW HOLSTEIN, WIS.

Tight Joint for Clay Sewer Pipe

220 It's easy to make perfect clay pipe joints with Wedge-Lock. Just paint the bell joint with lubricant, paint the spigot joint the same way, and push the pipe together. The "double-ball" type joint locks pipe in place, and is permanently root-proof and infiltration-proof. For the new *Wedge-Lock Clay Pipe Bulletin*, write THE ROBINSON CLAY PRODUCT CO., 65 W. STATE ST., AKRON 9, OHIO.

Mixes, Heats and Makes Hot Asphalt Patches

221 One unit, the Patchmobile Model PM-215, mixes, heats and makes hot asphalt patches for fast, economical street repair. It features a rotary dryer, asphalt tank, pugmill, power asphalt pump, spray attachment, volumetric asphalt measuring device and tool-heating compartment. For complete information, write the WYLIE MFG. CO., INC., BOX 7086 (ZONE 12) OKLAHOMA CITY, OKLA.

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222 Municipalities don't have to store large amounts of chlorine in order to have it on hand when needed. The JOHN WILEY JONES CO., 100 SUNNY SOL BLVD., CALEDONIA, N. Y., will deliver your chlorine products — liquid chlorine, calcium hypochlorite, or sodium hypochlorite — quickly and economically. Five distribution centers, located in key areas throughout the U. S., will supply any amount of chlorine—16 pounds and up—in any type container. Prices on request.

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223 It took over 1½ years to prepare this *Data and Specification Manual* covering all types of grating, open steel floor armor, stair treads, bridge decking and drain grates. The manual features safe load tables for all basic types of gratings, panel width constant charts, and other informative data. It is available from the KLEMP METAL GRATING CORP., 6605 S. MELVINA AVE., CHICAGO 38, ILL.

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224 Make your municipal water department both efficient and self-supporting by installing Badger water meters. These effective units measure water accurately, providing a precise check on water usage and waste. They are available from the BADGER METER MFG. CO., MILWAUKEE 45, WIS.

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225 One man operating a Mobil-Sweeper sweeps deep, wide gutters, sharp curb returns and steep hills, quickly and easily. The economical machine features right and left gutter brooms that sweep dirt, bottles and other trash into the path of a full-floating pickup broom, leaving a clean, 10-foot swath behind. The unit sweeps, sprays and carries the full load of refuse directly to the dump. Write MOBIL-SWEEPER, DIV. of THE CONVEYOR CO., 3260 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

How to Design Chlorine-Feeding Systems

226 You can be sure that chlorine will be applied proportionately to the flow of water at all times, if you follow the suggested SterElator layouts proposed by the EVERSON MFG. CORP., 203 W. HURON ST., CHICAGO 10, ILL. The chlorine-feeding equipment manufactured by this company can be supplied for fully automatic, semi-automatic and manual control, depending on specific requirements in your plants and booster stations. Details on request.

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227 It doesn't matter whether you have a small, flue-fed apartment house incinerator or a big municipal plant, you can forget your fly-ash troubles if you install a Peabody scrubber. It uses a multi-jet impingement baffle plate that provides an extremely intimate mixture of the gas and scrubbing liquids. Gases passing through the scrubber can lose as much as 99% of the fly-ash and meet the strictest of air-pollution codes. Get *Bulletin* 203-*B* from the PEABODY ENGINEERING CORP., 580 FIFTH AVE., NEW YORK 36, N. Y.

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(Please turn to page 30 for more Bulletins)

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230 Installed in your municipal water plant, glazed tile filter bottoms won't corrode or tuberculate, and they provide equal distribution with a low loss of head. These permanent filter bottoms require only a small-size gravel. They are available from the F. B. LEOPOLD CO., INC., 2413 W. CARSON ST., PITTSBURGH 4, PA.

The Story of Clean Sewers and Clean Water Mains

231 This new 48-page booklet, *Catalog No. 55A*, gives you the story of sewer cleaning, simplified so that everyone can understand; comprehensive enough to cover all the problems. It carries full details about power cleaning machines, the Sewertodelt, hand tools and all accessories. *Catalog No. 55B*, describing water main cleaning tools and methods is also available. Write FLEXIBLE, INC., 3786 DURANGO AVE., LOS ANGELES 34, CALIF.

Outboard Power for Police and Fire Boats

232 A new line of outboard motors stressing increased stamina, and smooth, quiet operation is recommended for installation in police, fire and emergency boats. For full information on versatile Aquasonic models for work-boat duty, write EVINRUDE MOTORS, DIVISION OF OUTBOARD, MARINE & MFG. CO., 4626 N. 27th ST., MILWAUKEE 16, WIS.

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233 The water treating plants designed by the General Filter Co. provide better water with minimum maintenance and long, trouble-free operation. This company will engineer each installation to specification, supervise the installation, and train the personnel who will work with the equipment. For detailed information on all of your water treatment problems, write the GENERAL FILTER CO., AMES, IA.

Rock Salt Simplifies Soil Stabilization

234 Through soil stabilization, rock salt is providing safe shoulders, safe secondary gravel roads and stabilized road bases which do not frost heave and cause hazardous pot holes. The latest in a series of pamphlets called "Better Highways Through Salt-Soil Stabilization" is now available from the INTERNATIONAL SALT CO., INC., SCRANTON 2, PA. Write for *Issue No. 5—Stabilizing Shoulders.*

Generators for Every Municipal Application

235 Fairbanks-Morse generators range in capacities from 600-watt portables to 125-kw sets—using gasoline, LP and other gases. The company's diesel models are available in capacities from 3-kw to 2,500-kw. For a new booklet on power generators, write FAIRBANKS, MORSE & CO., CHICAGO 5, ILL.

Dependable Water Meters

236 All Calmet water meters combine precision accuracy with long life and low upkeep costs. When the meters freeze, or pressure exceeds 450 pounds, Calmet's frost-proof bolts provide maximum protection against damage to working parts. For full information, write the WELL MACHINERY & SUPPLY CO., INC., FORT WORTH, TEXAS.

New Street Lamp Burns 4,000 Hours

237 The Duro-Test V-Beam traffic signal lamp incorporates a new filament design providing increased center-beam candle-power and better directional control and distribution. Rated at 4,000 hours, the lamp's beam intensity exceeds standards set by the Institute of Traffic Engineers. For additional data, write the DURO-TEST CORP., NORTH BERGEN, N. J.

Hydrants, Hose Boxes and Drinking Fountains

238 These dependable yard hydrants, hose boxes and drinking fountains feature a sturdy brass and bronze construction, won't freeze, and seldom require more maintenance than an occasional change of a washer. They are described in an informative new catalog from THE MURDOCK MFG. & SUPPLY CO., 426-B PLUM ST., CINCINNATI 2, OHIO.

Takes the Odor Out of Sewage

239 End grease and odor problems at your sewage treatment plant the Bionetic way, advises this manufacturer. Bionetic supplies odor consuming organisms and works to eliminate grease and sludges from the collection system. It is fully described in literature from the RELIANCE CHEMICALS CORP., BIONETIC DIV., P. O. BOX 6724, HOUSTON 5, TEXAS.

Speeds City Planning Projects

240 City planning problems such as new sewer systems, housing expansion, civil defense, and tax assessment, are quickly solved with Aero photomosaics and topographic maps. Aero Service offers you a "bird's-eye" view of the whole city planning picture in less time and at less cost than lengthy ground surveys. For your mapping requirements, write the AERO SERVICE CORP., PHILADELPHIA 20, PA.

Municipal Castings

241 Valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings —in any size, shape or style—are available from the BUFFALO PIPE & FOUNDRY CORP., BOX 55—STATION B, BUFFALO 7, N. Y. Write for *Bulletin M11.*

No Spoiled Ballots

242 An increasing number of cities and towns have found that errors may be completely eliminated and every vote counted, through the installation of automatic voting machines. How your community can simplify voting procedure, save time and cut costs, is explained in literature from the AUTOMATIC VOTING MACHINE CORP., JAMESTOWN, N. Y.

Firefighter Built to Specifications

243 With the Sharpsville Challenger Deluxe fire truck you can have any size tank with any type major, high-pressure or booster pump, in various capacities. Cabinets are built into the truck body for a portable pump, generator, lights, masks and other equipment. The Challenger reaches fires quicker, and goes into action sooner—with fewer men. It is built to your specifications by SHARPSVILLE STEEL FABRICATORS, INC., SHARPSVILLE, PA. Write for *Bulletin CL.*

Pipeline River Crossings

244 Only a ratchet wrench is needed to install Clow ball-and-socket river-crossing pipe. The ball-and-socket joint has fewer parts than any previously offered. It provides a full 15° free turning deflection without reducing the internal opening area, even at the point of full deflection. Clow river-crossing pipe, in extra long lengths, is described in literature from JAMES B. CLOW & SONS, 201-299 N. TALMAN AVE., CHICAGO 80, ILL.

Small Black-Top Paver

245 A tow-type bituminous paver is offered by the BLAW-KNOX CO., CONSTRUCTION EQUIPMENT DIV., 1904 STATE ST., NUNDA, N. Y. Called the Adnun Jr. Model 8, the unit is ideal for close-quarter work typical of many municipal resurfacing assignments. It will pave an 8-foot strip, and has a 12-hp motor to power the oscillating screed and breaker bar, and to maneuver the empty paver into position. *Bulletin* 2609 gives full details.

Incinerators for Schools and Hospitals

246 Choosing the right type of incinerator for a school, hospital or other public institution is easy with a copy of *The Incinerator Blue Book.* This booklet presents a complete classification of incinerators, a detailed fuel analysis, methods of feeding and charging refuse, and facts on various types of destructors. Also discussed are medical waste crematories and package-type disposalls. Write JOSEPH GODER INC., 5125 N. RAVENSWOOD AVE., CHICAGO 40, ILL.

Dependable Tractor Shovels and Attachments

247 Seven sizes of Payloader tractor-shovels and attachments are fully discussed in literature from THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL. Sizes range up to 2 cubic-yard capacity, with a choice of 4-wheel-drive, front-wheel-drive, or rear-wheel-drive. Complete distributor parts and service facilities are immediately available.

Park Benches and Picnic Tables

248 These sturdy park benches are constructed of smooth wood slats firmly bolted to a frame of 1½-inch channel steel, with additional bracing of 1-inch channel. The seat-frame and curved back-rest provide maximum seating comfort, and bench legs are turned back to prevent sinking into the ground. The company's picnic tables, available with or without planks, offer greater stability and easier access to seats. Write the TROJAN PLAYGROUND EQUIPMENT MFG. CO., SAINT CLOUD, MINN.

(Please turn to page 34 for more Bulletins)

(Please turn to page 30 for more Bulletins)

he knows how
to take the Debbil out of the Sun!

Old Sol—Devil or Saint can be . . . but to the farmer or rancher who has proper irrigation, the Sun is all Saint.

Layne knows a great deal about irrigation in all its phases because Layne knows a great deal about water, including development of ground water resources . . . utilization of existing water sources . . . application as well as proper equipment designed to meet specific conditions. Layne service to industry, agriculture and municipality has made Layne the world's largest developer of ground water resources—and that fund of knowledge is yours without cost or obligation when you "ask the man from Layne."

LAYNE & BOWLER, INC.
Memphis 8, Tennessee

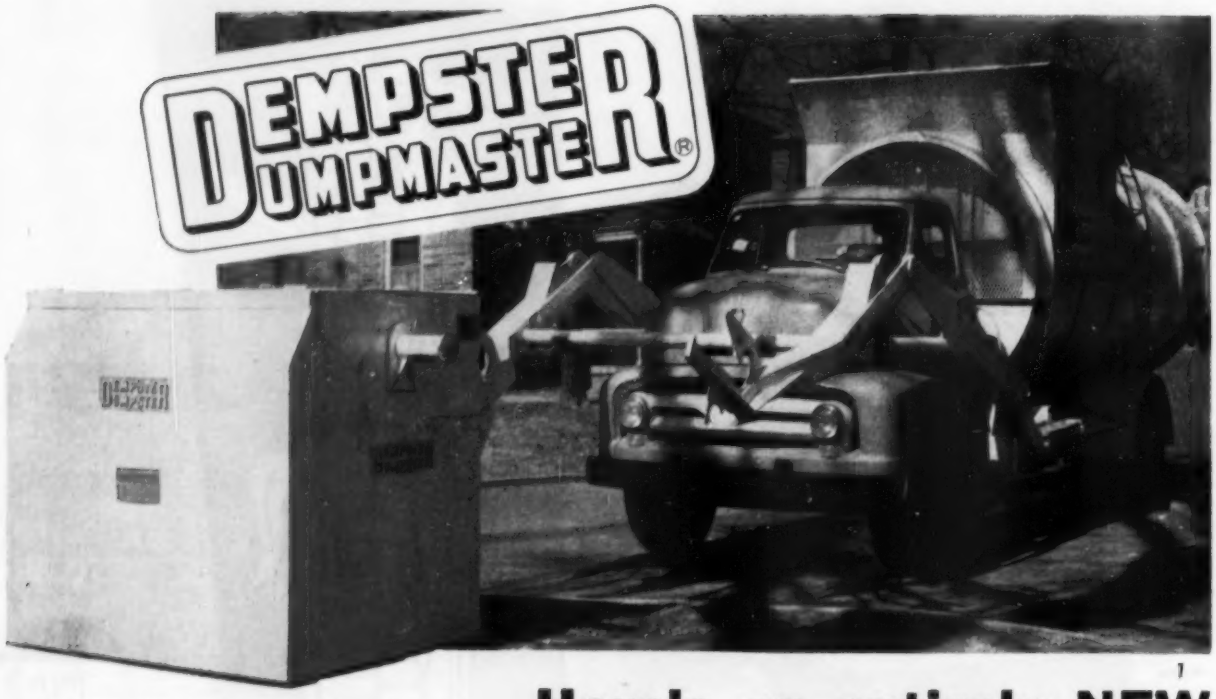
Layne Associate Companies Throughout the World

water wells • vertical turbine pumps • water treatment

Layne

on power generators, write FAIRBANKS, MORSE & CO., CHICAGO 5, ILL.

(Please turn to page 34 for more Bulletins)



BEFORE AND AFTER scenes below, photographed in Asheville, N. C., represent typical conditions where unsanitary, costly conventional handling of refuse were corrected with the modern, low cost Dempster-Dumpmaster and its detachable containers.

Here's an entirely NEW for any City or Town

THE FLEXIBILITY of the Dempster-Dumpmaster includes safe front-end collection of refuse from conventional cans in alley pickup. Men are always in safe area in full sight of driver. Containers may be handled from most any platform height, as shown in second photo at right.

IT'S THE LATEST development in the family of Dempster-Dumpster equipment for low cost handling of refuse. A glance at the pictures and one immediately realizes this Dempster-Dumpmaster is the natural solution to the great majority of costly and, unsanitary methods of refuse collection where containers of limited capacity are preferred. Here's why: (1) The Dempster-Dumpmaster Detachable Containers always remain at the accumulation point. (2) Three sizes—1¼, 2 and 3 cu. yds. capacities—are available to meet every requirement for frequent pickup. (3) Containers may be placed in or outside of build-

water wells • vertical turbine pumps • water treatment

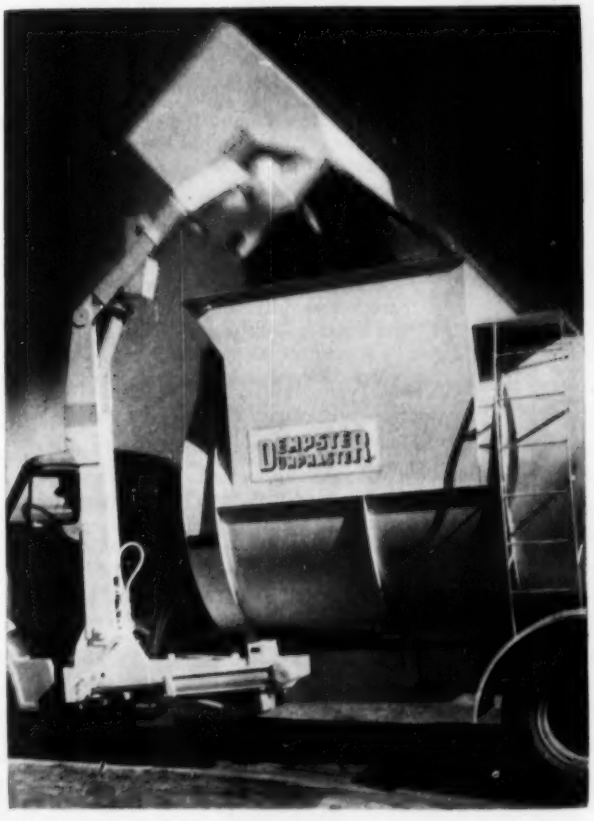
WITH THE DEMPSTER-DUMPSTER SYSTEM for collection of refuse in 6 to 15 cu. yd. containers and the new Dempster-Dumpmaster for collection in 1¼, 2 and 3 cu. yd. containers, your city can now further eliminate costly re-handling of refuse and unsanitary conditions caused by the use of inadequate conventional cans, open crates, boxes, etc. Like the larger capacity containers, those used with the Dempster-Dumpmaster are furnished with hinged lids, which are easily opened by user when deposits are made, then closed, sealing up the refuse—eliminating fire hazards, odors, rats and the scattering of trash and rubbish by winds and scavengers. When filled, they are emptied mechanically direct into compaction body for maximum capacity hauling. The simple action of the Dempster-Dumpmaster is shown in Photos 1, 2, 3 and 4. It serves one detachable container after another. Casters may be supplied on any container for easy movement to and from pickup point. 1½ cu. yd. open front container is available for alley pickup collection of residential refuse.

2

3

Revolutionary Method of Refuse Collection regardless of size

4



ings—caster equipped 1¼ cu. yd. containers, for instance, pass through single doorways into office buildings, stores, cafeterias, etc. (4) Only one man, the driver, is required and he never has to leave operator's seat. (5) By picking up loaded refuse at front end of truck, driver has complete vision of the entire operation when Dempster-Dumpmaster is being used for collection of refuse from conventional cans in alleys, etc. (6) Hydraulically operated Dempster-Dumpmaster picks up each container and dumps refuse in the compaction type body for maximum capacity loads. (7) No equipment approaches the flexibility of the Dempster-Dumpmaster for general service, particularly in the smaller cities.

The Dempster-Dumpmaster is now available with compaction type body of 20 cu. yd. capacity, mounted on any make truck chassis of suitable size. Write us today for complete information. Dempster Brothers, Inc.

DEMPSTER BROTHERS

865 Dempster Building, Knoxville 17, Tennessee

HOW TO LOCATE WATER LEAKS

...with Simplex Pitot Equipment

WHY not decrease your load and stop pumping to waste? Locate the hidden leaks which waste thousands of gallons per day per mile of main . . . far more than usually guess-timated!

Locating these leaks with Simplex Pitot Equipment costs only a tiny fraction of the value of the water being wasted. You get accurate flow records with minimum effort . . . valuable data that will help you to reduce "unaccounted-for water" to a minimum.

PITOT ROD

Simple, rugged and lightweight. Easily installed on any pipe or main. Special clamp holds tube firmly in position against water pressure.

Low coefficient gives high differential pressure for greatest accuracy.

MANOMETER

Quickly connects to a Simplex Pitot Rod with flexible tubing. You then have a simple, sensitive and inexpensive instrument for indicating rate of flow.

Can be used for wide flow ranges . . . low or high.

PITOT RECORDER

Connects easily to Pitot Rod. Eight-inch chart records flow data. Simple and rugged construction . . . no delicate mechanisms...yet sensitive and accurate.

Sturdy carrying case. Leveling feet. Reliable 7-day clock movement for chart. Accurately calibrated.

Get the Facts!

Free 20-page Technical Bulletin 1300. Full instructions for use and care of Pitot equipment. Seven pages of helpful formulae, tables, curves. Write to Simplex Valve & Meter Co., Dept. AC-6, 7 E. Orange St., Lancaster, Pa.

SIMPLEX®

VALVE AND METER COMPANY

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Superior Sand and Gravel for Filters

249 Sand and gravel for water filters is produced to exact specifications by the NORTHERN GRAVEL CO., BOX 307, MUSCATINE, IA. The firm's filter sand is hard and free of soluble particles, assuring efficient operation of your rapid sand filter. The filter gravel is graded to sizes which will support the filter sand, and is hard, round and resistant to solution.

"Reboring" Restores Sewers

250 Restoring sewer pipe to design efficiency has been simplified by a new Reboring method introduced by the NATIONAL POWER RODDING CORP., 4600 W. MADISON ST., CHICAGO 44, ILL. The fast, economical operation of Power Rodding equipment speedily restores sewer pipe, conduits and ducts to full capacity, saving the cost of replacing them. A new booklet, *Now Rebore Sewers,* will be furnished on request.

Dependable Warning Sirens

251 Adequate warning in time of air raids or other major disasters is provided by the Thunderbolt, a new electric siren available in two-tone or single-tone models. The Thunderbolt combines a powerful, controlled, rotating beam of sound with full sound output on low as well as high notes, and an unusual sound volume. Its superior penetration and range make it a must for safety-conscious municipalities. For *Bulletin* 97, write the FEDERAL SIGN & SIGNAL CORP., 8756 S. STATE ST., CHICAGO 19, ILL.

New Traffic Paint Dries in Three Minutes

252 Centerlines, crosswalks and other traffic lines of Safety-Lite Traffic Coating take only three minutes to dry, and are ready for traffic 10 minutes after application. The economical paint dries to a tough, mar-proof flexible film that won't crack or peel. It is waterproof, alkali-proof and weather-proof, and comes in yellow or white, plain or reflectorized. Write the CON-LUX PAINT CORP., METUCHEN, N. J.

Effective Dust Control

253 This Gulf Sani-Soil-Set is an economical answer to the problem of controlling dust on playgrounds, parking lots, airports and many other bare-earth areas. A liquid material with a non-offensive odor, it anchors dust by adhering to and weighing down the dust particles. One application is usually sufficient to eliminate dust annoyance for an entire year or season. For additional information, write the GULF OIL CORP., GULF BLDG., PITTSBURGH 30, PA.

Makes Hot and Cold Asphalt Mixes

254 Barber-Greene's 840-B bituminous plant interlocks aggregate and bitumen feeds for constant correct proportioning. The mixer alone enables you to produce a stabilized base and cold bituminous mixes. Then, by adding a dryer, gradation control and dust collector, your plant can produce mixes to meet any specification. Each unit is mounted on pneumatic tires for towing at truck speeds. Write BARBER-GREENE, AURORA, ILL.

(See page 36 for more Bulletins)

EASY DOSE IT...

...at the Bland Correctional Farm

Operating personnel at the Bland Correctional Farm in White Gate, Virginia, report this Builders Model DVS Chlorinizer has been mighty easy to work with ever since it was installed in early 1951. Due to Chlorinizer's positive-acting chlorine control system, plant personnel have been able to set the chlorine dosage at the exact rate required by their water sterilization needs. Plant operator Johnson is shown in the photo adjusting the feed rate and double checking the adjustment on the direct-reading Sightflo indicator which meters total chlorine flow. Beyond the replacement of chlorine cylinders and an occasional check on chlorine flow rate, the Builders Chlorinizer has required no appreciable service or maintenance since installation.

Hundreds of performance reports like this are coming in from Chlorinizer users in municipalities, institutions, and industries throughout the country. If you are considering new chlorination capacity, or replacement of present chlorination equipment, why not check your nearest Chlorinizer installation. We will be glad to send you a list of Chlorinizer users in your area . . . and also bulletins describing the four basic Chlorinizer models. Write, today, to Builders-Providence, Inc., 358 Harris Ave., Providence 1, Rhode Island.

BUILDERS-PROVIDENCE

DIVISION OF B-I-F INDUSTRIES, INC.

BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO.

B·I·F METERS FEEDERS CONTROLS

(See page 36 for more Bulletins)

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Cleans Sewers Quickly

255 Mounted on a balanced 4-wheel chassis, the OK Champion power sewer cleaner features a new pole-suspended guide wheel which lowers easily—keeps sanitation workers out of the manhole. A built-in gear reduction ratio permits better use of power for bucket travel and pulling efficiency. An automatic safety clutch acts instantly, avoiding damage to drain tiles or machines. For the lateat OK Champion Circular, write the CHAMPION CORP., 4716 SHEFFIELD AVE., HAMMOND, IND.

Easy-to-Erect Steel Warehouses

256 This factory-built municipal warehouse is quickly bolted together right on the site. Constructed of steel or aluminum, it is easy to maintain and may be quickly expanded by bolting on new additions. Economical Butler buildings are described in literature from the BUTLER MFG. CO., 7350 E. 13TH ST., KANSAS CITY 26, MO.

Makes Clean, Even Centerlines

257 Anyone can operate the new Jaweo Traffic Liner and get smooth, even and straight traffic and zoning lines. The lightweight machine holds a full five gallons of traffic paint. Easy to operate, it features low initial, maintenance and upkeep costs. Write the WEAVER MACHINE CO., P. O. BOX 1224, YORK 1, PA.

WE KNOW
VALVES &
HYDRANTS
About an egg beater or an A-bomb we know little or nothing. But with valves and hydrants, it's different!
For many years we have been making M&H Valves, Hydrants and accessories on the same basic design — a design originally conceived by applying exhaustive research and careful engineering to practical knowledge of foundry production and water works operation.
As we learned new things during the past, we have made improvements. Our goal has been to make the best valves and hydrants money could buy. So, from year to year our sales have grown. Our company has now become a leading producer of valves and hydrants. And — if and when better valves and hydrants ever are made, we expect them to be M&H.
We know valves and hydrants. For details, write M&H VALVE & FITTINGS COMPANY, Anniston, Alabama.
M&H PRODUCTS
FOR WATER WORKS • FILTER PLANTS INDUSTRY • SEWAGE DISPOSAL AND FIRE PROTECTION

"Old Swimming Pool Goes Modern"

258 The city sanitarian of a well-known southern city wrote this informative article on modernizing an old-fashioned swimming pool. In it, he discusses the savings realized and the methods used to redesign certain features of an old fill-and-draw pool to permit the use of a recirculation system. Get *Technical Reprint T-131* from the GRAVER WATER CONDITIONING CO., 216 W. 14TH ST., NEW YORK 11, N. Y.

Clay Pipe Provides A Watertight Sewer Line

259 You can prevent costly ground water infiltration in your sewer system with economical Amvit Jointed Clay Pipe. The Amvit joint is based on the ball-and-socket principle, with the diameter of the spigot ring somewhat larger than the largest diameter of the bell ring. When the two ends are pushed together, the rings are in constant compression of more than 22 psi. Water cannot force its way in or out of the line. For complete information on this infiltration-proof and root-proof pipe, write the AMERICAN VITRIFIED PRODUCTS CO., CLEVELAND, OHIO.

Make Your Own Charts and Graphs

260 Anyone can develop, complete and revise perfect organization charts without drawing a single line with the new Chart-Pak method. You can chart your own graphs, too, saving time and the cost of professional draftsmen. Detailed information on the economical Chart-Pak method is available from CHART-PAK, INC., 100 LINCOLN AVE., STAMFORD, CONN.

Incineration for Any Size Community

261 Whatever the size of your community, be it a small city or a thriving metropolis, there is a Nichols Monohearth refuse incinerator to meet your requirements. These mechanically-stoked incinerators and Nichols Vertical Monohearth refuse incinerators are described in an informative new booklet containing a number of reprints from magazines, and illustrations of existing incinerator installations. Write the NICHOLS ENGINEERING & RESEARCH CORP., 70 PINE ST., NEW YORK 5, N. Y.

Grader and Dozer Blades for I-H Crawlers

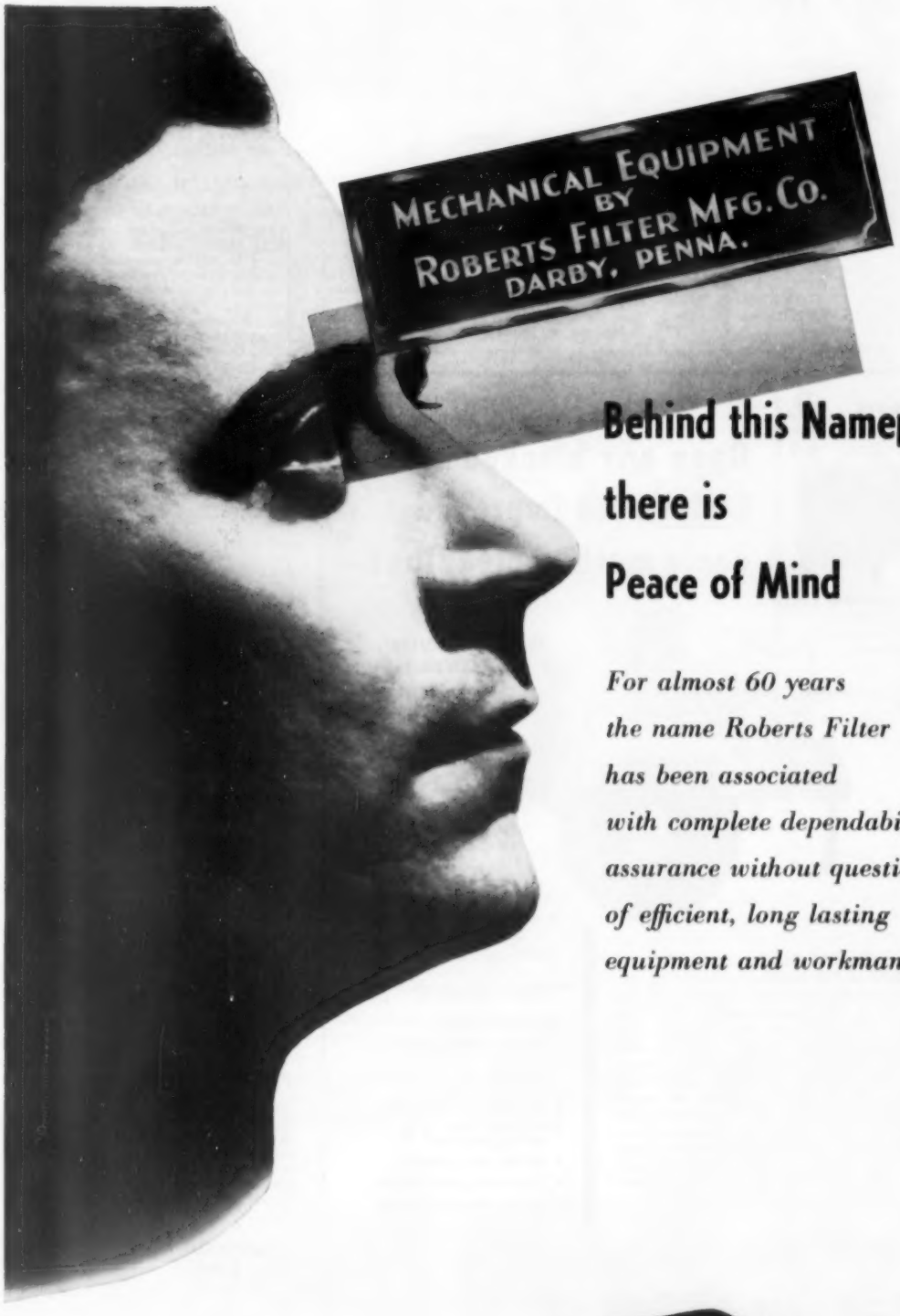
262 Prepare your International TD-6, T-9, TD-9, TD-14A and TD-18A crawler tractors for heavy-duty grading or dozing operations, by installing these hydraulic bulgrader and buildozer blades. The blades are raised, held, lowered and put in float position by a single, easy-to-reach, 4-position lever. They are fully described in a new, 24-page catalog rom the CONSUMER RELATIONS DEPT., INTERNATIONAL HARVESTER CO., CHICAGO 1, ILL.

Estimating Grout Requirements

263 A handy card for estimating the grout requirements of heavy equipment, machinery, anchor bolts and bridge seats, is available to all city engineers and plant maintenance men. The front side of the card lists Embeco Pre-Mixed Grout yield and estimating figures for one 100-pound bag or pail, a cubic yard of flowable grout, and 100 square feet of flowable grout 1-inch thick. On the reverse side, an easy, 4-point estimating procedure is given. Write the MASTER BUILDERS CO., 7016 EUCLID AVE., CLEVELAND 3, OHIO.

(See page 38 for more Bulletins)

DIVISION OF B-I-F INDUSTRIES, INC.
BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • OMEGA MACHINE CO.
BIF METERS FEEDERS CONTROLS



Behind this Nameplate there is Peace of Mind

For almost 60 years the name Roberts Filter has been associated with complete dependability... assurance without question of efficient, long lasting equipment and workmanship.

Roberts Filter Manufacturing Company
Darby, Penna.

(See page 38 for more Bulletins)

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Purifies Swimming Pool Water

264 Every municipal swimming pool operator should benefit from this discussion of problems inherent in purifying and safeguarding swimming pool water. A new manual, *Purification of Swimming Pool Water with HTH Tablets*, contains an up-to-date chart showing average daily chlorine requirements, data on typical chlorine residuals versus time curves, and methods of installing the HTH Tablet Hypochlorinator. For your copy, write the HYPOCHLORITE PRODUCTS DEPT., INDUSTRIAL CHEMICALS DIV., OLIN MATHIESON CHEMICAL CORP., BALTIMORE 3, MD.

Municipal Uniforms

265 This company specializes in durable uniforms for police and fire-department officials as well as for other city employees. Get full information on dependable departmental dress from the BEST UNIFORM CO., 305 E. FORDHAM RD., NEW YORK 58, N. Y.

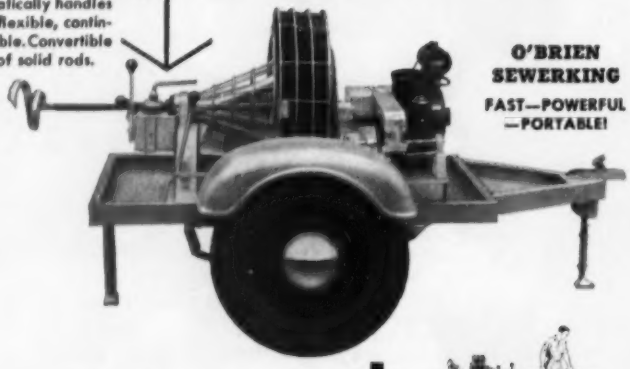
Street-Name Signs of Sturdy Porcelain

266 A variety of porcelain street-name signs with cast "tenzaloy" frames, porcelain steel frames, and embossed letters without frames, are designed by the MUNICIPAL STREET SIGN CO., INC., 777 MEEKER AVE., BROOKLYN 22, N. Y. Also cast-aluminum street-name signs with raised letters, and baked enamel signs with embossed letters. A new catalog, *Signs by Municipal*, will be furnished on request.

• OB - POWER TRANSMISSION

Automatically handles heavy flexible, continuous cable. Convertible to use of solid rods.

Open any blocked sewer faster with improved cable method cleaning!



O'BRIEN SEWERKING
FAST—POWERFUL —PORTABLE!

City after city is abandoning inefficient, time-wasting solid rodding—adopting instead, power-fed, *continuous* steel cable for sewer cleaning. This improved method has been made practical by the amazing OB Power Transmission found only in the O'Brien SEWERKING. This unit (*illus. above*) controls the feeding, rotating, retrieving and coiling of 1" cable, which is much stronger than rods. It's the big reason for SEWERKING'S fast growing popularity—among cities who have lacked power cleaning equipment—and among those who are replacing with SEWERKING for better performance, less labor, and lower costs!

Easy on budgets — to buy and operate!

- Operated by 1 or 2 regular maintenance men.
- Full power—no manual labor.
- Continuous cable — no time wasted joining rods.
- Minimum street occupancy.
- Cleans sewers up to 500 feet.
- Complete line of cutting tools.

FREE DEMONSTRATION! WRITE for facts and figures today! Demonstrations arranged without obligation.

O'Brien Sewerking®

Dept. AC 655

O'BRIEN MANUFACTURING COMPANY • 5662 Northwest Highway • Chicago 30

Odorless Cleaner for Septic Tanks

267 Simplify your suburban sanitation problems with the O.S.C., a new septic tank cleaner that is completely odorless. The packaged pump and tank apparatus is easily mounted on a truck, and will quickly pump out septic tanks, cesspools and outside toilets. It is fully described in literature from the GORMAN-RUPP CO., MANSFIELD, OHIO.

Rebuilds, Repairs and Refills Street Brooms

268 This company makes, or has in stock, a brush or broom for practically every sanitation need. All types of fibres, bristles and wires are available for refilling worn, damaged or broken brushes. New brushes may be obtained for Tennant, Wilshire, and other types of power brush sweepers. For complete information, write the VAN BRUSH MFG. CO., INC., 327 SOUTHWEST BLVD., KANSAS CITY 8, MO.

Filter Plant Gauges

269 Use these new filter plant gauges for measuring effluent flow, loss of head, wash water and water elevation, and to find out the percent of filter bed expansion. *Bulletin No. 1002* describes the various types of meters and includes facts on operation, construction, sizes and capacities. For your copy, write the SIMPLEX VALVE & METER CO., 7 E. ORANGE ST., LANCASTER, PA.

New ½-Yard Crawler Tractor

270 An efficient ½-yard crawler tractor with "big machine" features and durability, is offered by the CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., 416 SECOND ST., BENTON HARBOR, MICH. The C-16 is designed for bigger yardage, bigger tonnage, and substantially lower maintenance. Like all Michigan machines, it is available on a low-cost lease plan. Write for literature.

Heavy-Duty Mower for Parks & Lawns

271 Powered by a Wisconsin 4-cycle engine, the Spinaway Model 31 self-propelled, rotary suction power mower is ideal for maintaining parks and large public lawns. The unit has a full 31-inch cut and an efficient capacity of up to 8 acres a day at normal operating speed. Details on the Model 31 and smaller Spinaway mowers, may be obtained from HAL-GAN PRODUCTS INC., 13000 BLUE MOUND RD., MILWAUKEE 13, WIS.

Stops Rust

272 From water tanks, fences, street lights, machinery and equipment, to water and sewage works plants—your metal surfaces are protected with Rust-Oleum. The efficient rust-preventive dries quickly, is odor-free, and effectively resists salt water, heat, sun, fumes, weathering and smoke. It is available in a variety of colors from the RUST-OLEUM CORP., 2511 OAKTON ST., EVANSTON, ILL.

Tractor for Many City Jobs

273 Oliver's Super 55 tractor is available with either diesel or gasoline engine for a variety of municipal applications. Attachments may be connected to the tractor quickly by means of a 3-point hitch, or they may be front or side-mounted on the tractor frame. Light-handling ball-type steering and double-disc brakes simplify maneuvering in tight quarters. Write THE OLIVER CORP., 400 W. MADISON ST., CHICAGO 6, ILL.

(See page 43 for more Bulletins)

How Rockwell Is Anticipating The Growing Needs of Water Utilities...

● FACTORIES

Barberton, Ohio
Bellefontaine, Ohio
Brooklyn, N.Y.
Dubois, Pa.
East Chicago, Ind.
Hopewell, N.J.
Knox, Ind.
Norwalk, Ohio
Oakland, Calif.
Pittsburgh, Pa.
Sulphur Springs, Tex.
Tupelo, Miss.
Tulsa, Okla.
Uniontown, Pa.

▲ WAREHOUSES

Atlanta
Boston
Chicago
Houston
Kansas City
Los Angeles
Tulsa
Seattle

■ SALES OFFICES

Atlanta
Boston
Charlotte
Chicago
Dallas
Denver
Houston
Kansas City
Los Angeles
Midland, Tex.
New York
Philadelphia
Pittsburgh
San Francisco
Seattle
Shreveport
Tulsa

L. A. DIXON, JR., *Vice President, Meter and Valve Division,* says:
"We are better equipped, better stocked and better staffed than ever before to furnish the right kind of meters you need, when you need them!"

•New Factories •More Warehouses •Bigger Sales Staff

Improvement and expansion are the order of the day and we at Rockwell have accepted the challenge. To take care of increasing demands for Rockwell water meters, we have built and are now operating an entirely new factory in Uniontown, Pa.

Getting new meters, meter parts and valves into your hands when and as you need them is another problem we have faced and solved. Now, warehouse stocks of all popular sizes and types are maintained at eight convenient locations throughout the country.

We have also multiplied our degree of personal service to your needs. Nearly twice as many Rockwell men travel the country as formerly. You'll find them better informed and of greater help through having been soundly schooled and trained in all phases of water measurement.

Yes, we at Rockwell are prepared for a period of growth and expansion unparalleled in the history of water distribution. We invite you to make the best use of our equipment and facilities in the days and years ahead.

H. GOTTWALD
Eastern Regional Manager

J. W. NORTHCUTT
Southern Regional Manager

C. C. MOORE
Central Regional Manager

R. R. BUSH
Midwestern Regional Manager

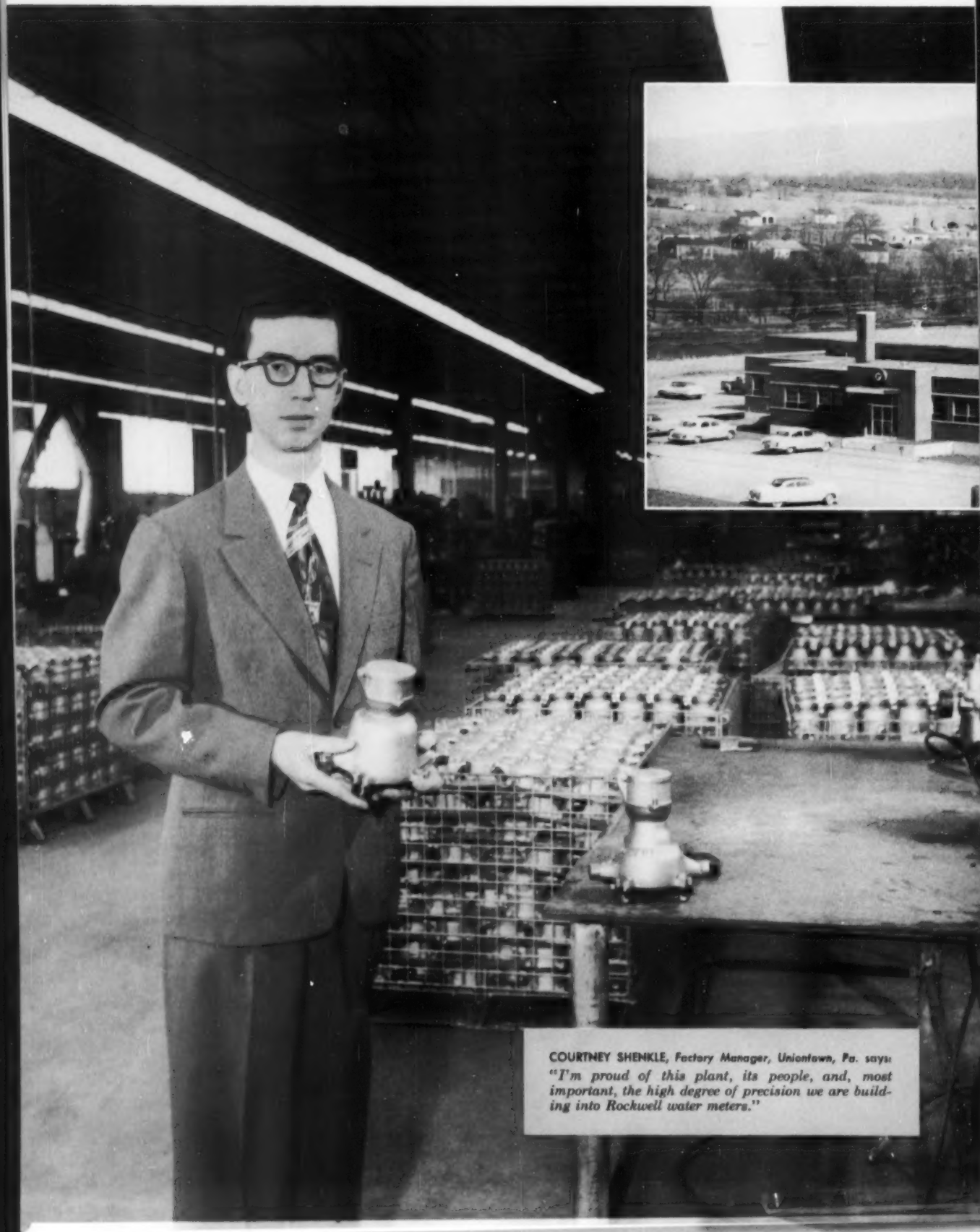
W. R. McLAUGHLIN
Southwestern Regional Manager

H. BOEZINGER
Western Regional Manager

J. F. O'GRADY
Manager Water Products

ON THE NEXT PAGE . . . Courtney Shenkle, Factory Manager, tells you about the new Rockwell water meter plant at Uniontown, Pa.

New Rockwell Water Meter



COURTNEY SHENKLE, Factory Manager, Uniontown, Pa. says: *"I'm proud of this plant, its people, and, most important, the high degree of precision we are building into Rockwell water meters."*

ON THE NEXT PAGE . . . Courtney Shenkle, Factory Manager, tells you about the new Rockwell water meter plant at Uniontown, Pa.

Plant Now In Full Operation

OVER $2 MILLION INVESTED TO BRING A BETTER FUTURE TO WATER METER USERS

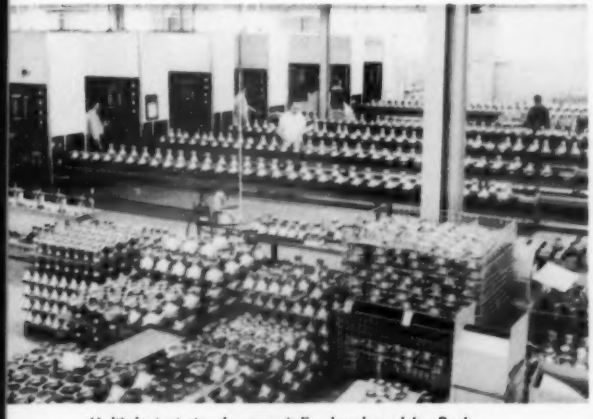
Designed For Precision Production

This new Rockwell plant was laid out and completely tooled for one specific purpose . . . to produce the finest water meters it is possible to make. In every phase of manufacture the most modern methods and machinery are used. And to safeguard consistent high quality, every practical piece of inspection equipment is at hand to chemically and physically control the materials used . . . to assure dimensional exactitude in the finished parts. All this means meters that will measure at top accuracy for longer periods and at lower costs . . . the kind of meters *you* need to cut maintenance and increase revenue.

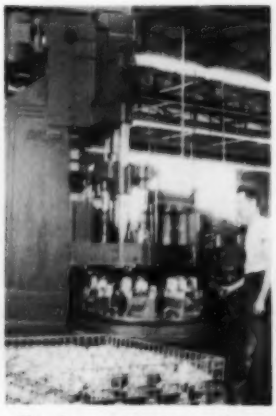
Our huge investment in this new plant and equipment is solid evidence of our faith in the future and growth of the water utilities. It is a confidence you can share in your plans for the improvement and expansion of your own operations.

For light machining, Rockwell-built Delta drill presses provide flexibility and accuracy.

Previously sub-assembled parts are fitted into meter cases at this station.



Multiple test stands, especially developed by Rockwell engineers for proving accuracy before shipment.



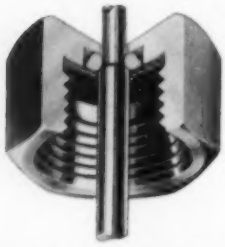
This huge automatic machine performs seven different operations on a meter case.

Operator at test stand panel controls rate of flow and water pressure. Meters can be tested at three times the pressure normally encountered.

ON THE NEXT PAGE . . . C. K. Madison tells you about the Rockwell research and development program.

Rockwell Engineering Is Always First With The Finest In Design Improvements

"O"-Ring
STUFFING BOX NUT
ASSEMBLY



Eliminates Leaks,
Binds, Troubles, Expense

In the Rockwell organization, research and development is budgeted at a substantial figure in our tabulation of operating expense. Planning ahead, searching for better meter designs and improved meter components is a never-ending process. From this program, which involves both our own laboratories and Research Fellowships, have come many significant developments that either enhance water meter performance or add to the value customers receive from our products. It's a carefully conceived program designed to improve the economic future of water distribution and to increase our usefulness to the water works industry.

C. K. MADISON, *Vice President, says:*
"In my 30 years' experience with water meters, I consider our new O-Ring stuffing box assembly the greatest single improvement ever developed."

Rockwell Products For Water Utilities

Rockwell Arctic Meter

Rockwell Empire Type 12 Meter

Rockwell Empire Type 14 Meter

Rockwell Eureka "B" Meter

Rockwell Tropic Meter

Rockwell
Single Register Meter

Rockwell Type 6 Meter

Rockwell Empire Type 16
Meter

Rockwell-Nordstrom
Service Cock

Rockwell-Nordstrom
Standard Valve

Rockwell-Nordstrom Gear
Operated Valve

Rockwell Manifold
Compound Meter Unit

ROCKWELL MANUFACTURING COMPANY
PITTSBURGH 8, PENNSYLVANIA

Atlanta Boston Charlotte Chicago Dallas Denver Houston Los Angeles Midland, Texas
New York Kansas City, Mo. Philadelphia Pittsburgh San Francisco Seattle Shreveport Tulsa

ON THE NEXT PAGE . . . C. K. Madison tells you about the Rockwell research and development program.

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Clean Water . . . And How to Get It

274 While water pollution is a national problem, it requires a solution at the local level. A new manual from the GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y., offers a detailed outline for efficient anti-pollution programs. Dealing primarily with the municipal sewage problem, it tells how to build public support for immediate and long range waste treatment plant projects. Single copies of *Clean Water . . . And How to Get It*, are available on request.

Digs Deep Trenches Faster

275 How the Sherman Power Digger facilitates a variety of municipal digging operations is explained in a new booklet from SHERMAN PRODUCTS, INC., ROYAL OAK, MICH. Included in the booklet are a number of on-the-job photos, work range and specifications of the machine, and a description of many handy accessories.

Low-Cost Bleachers for Top Seating Comfort

276 Economical seating for special public occasions is provided by Dur-A-Bilt bleachers, designed for safety, durability and top seating comfort. These portable units are easily moved from one location to another, either outdoors or indoors. They are furnished in individual sections, continuous seating, elevated stands, with or without aisles, and stands with entrance or exit ramps. Write the PLAYTIME EQUIPMENT CORP., MARS, PA.

New Gun Carrier for Police Cars

277 Installed on either the right or left side of any police patrol car, the new "Flash Action" gun carrier keeps firearms within easy reach of the police officer and well out of view of motorists and pedestrians. It holds the gun securely, protecting it against dust and dirt. Further, there is nothing to unbolt or unlock. You simply flip the lever and the gun is ready for "Flash Action." Write the A. REED WILSON CO., 1320 McGEE ST., KANSAS CITY, MO.

Automatic Plant Operation

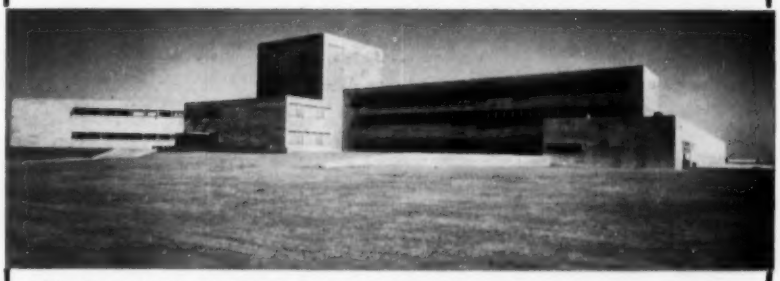
278 Automatic operation of your water and sewage plants and municipal pumping stations doesn't mean a thing if you can't get dependability with it. You can guarantee this dependability by specifying Adlake Mercury Relays. These sensitive units feature time-delay characteristics that are fixed and non-adjustable, and they are immune to normal line voltage fluctuations or ambient temperatures from —38° to 200° F. Write THE ADAMS & WESTLAKE CO., ELKHART, IND.

Double-Boom Wrecker Gets New Hydraulic System

279 Now you can raise and lower the booms on Weld-Built's double-boom wrecker hydraulically, facilitating a variety of operations over the side of the wrecker. This side work is further simplified by telescopic booms that extend up to 20 feet. Get full information on the new double-boom wrecker as well as other power wreckers with capacities from 3 to 20 tons, from the WELD-BUILT BODY CO., INC., 5903 PRESTON COURT, BROOKLYN 34, N. Y.

(See page 44 for more Bulletins)

Use Northern Gravel for Rapid Sand Filter



The South District Filtration Plant of the city of Chicago, is the largest in the world. Northern Gravel Company furnished them 422 carloads with clocklike regularity, enabling installation continuously and economically.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity Coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

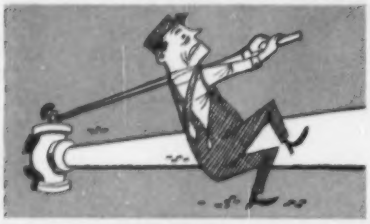
supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 40 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

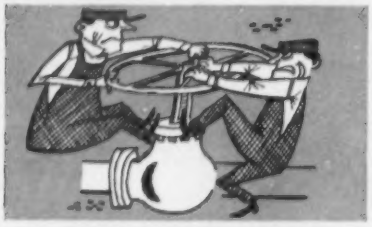
Northern Gravel Company

Box 307 **Muscatine, Iowa** Phone: AMherst 3-2711

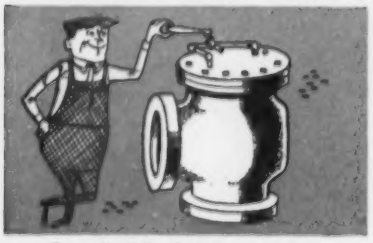
Do you have to operate your **PLUG VALVE** like this?



Or do you have to use Two Men to operate your **GATE VALVE** like this?



then install the **G-A FLOWTROL VALVE** which can be operated **LIKE THIS**



Standard-built for pressures up to 300 psi
Built to order for higher pressures
Sizes 2" to 36"
WRITE FOR TECHNICAL FACTS TODAY

GOLDEN ANDERSON Valve Specialty Company
1200 RIDGE AVE., PITTSBURGH 33, PA.
Designers and Manufacturers of VALVES FOR AUTOMATION

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Measures Water and Other Liquids Accurately

280 Dependable, automatic measurement of hot and cold water, oils, chemicals and other liquids is provided by efficient Niagara meters. These meters may be used for five measuring functions: continuous measurement, batch metering for manual control, batch metering for automatic control, rate-of-flow measurement, and controlling proportional flow. Get *Bulletin* 33 from the BUFFALO METER CO., 2902 MAIN ST., BUFFALO 14, N. Y.

Picks Up, Hauls and Dumps Refuse

281 Mounted on any truck chassis, the Brooks Load Lugger lifts a Load Lugger container filled with refuse onto its steel deck, cradles it between steel sidewalls for travel safety, hauls it away, dumps or spreads the refuse, then returns the container and puts it down. Standard Load Luggers will lift payloads up to 18,000 pounds. Container capacities range from 1½ to 14 cubic yards. Write the BROOKS EQUIPMENT & MFG. CO., 2032 DAVENPORT RD., KNOXVILLE, TENN.

Glass-Bead Dispenser for Marking Traffic Lines

282 Easily attached to any striping machine, the new Model "G" dispenses glass beads on solid or skip lines from three to six inches wide. Starting and stopping the flow of beads is controlled by air from a paint gun air line. The dispenser meters beads automatically per lineal foot of marking regardless of the speed of travel. Full details on the Model "G" dispenser are available from the G. D. BAVIN CO., 2500 W. SIXTH ST. BLDG., LOS ANGELES 57, CALIF.

Swimming Pool Supplies, Chemicals & Equipment

283 Modern Swimming Pool will furnish every item needed to build, equip and maintain your city's swimming pools — from the smallest plumbing fitting to a complete filter plant. For detailed information on supplies, chemicals and equipment, plus instructions on proper pool care and maintenance, write for *Catalog & Data Book No.* 505 to the MODERN SWIMMING POOL CO., INC., 1 HOLLAND AVE., WHITE PLAINS, N. Y.

Handling Bulk Chemicals

284 Lime, alum, soda ash—all can be unloaded fast and with minimum labor if your water department has a Holly Pneumatic Conveying System. Most Holly Systems can be completely operated by one man, usually by push-button automatic control. Typical installations are described in a new bulletin from HOLLY PNEUMATIC SYSTEMS, INC., 15 E. 40th ST., NEW YORK 16, N. Y.

Trucks for Every Municipal Need

285 Trucks that last longer, operate more efficiently, and haul at minimum cost are available for every municipal need. A variety of dependable White trucks are now being used by many cities to haul garbage and asphalt, transport and supply maintenance crews, plow snow and flush streets. Get illustrated literature from THE WHITE MOTOR CO., CLEVELAND 1, OHIO.

A Safe Guide for Summer Traffic

286 *Catalog No.* 354 tells city officials how to reduce traffic fatalities during the heavily traveled, summer months. This can be done, says Prismo, with efficient reflective marking materials such as traffic stripes, zone and crosswalk markings, and pavement word legends, that are clearly visible in any weather. Write the PRISMO SAFETY CORP., HUNTINGDON, PA.

Spreader Is Always in Season

287 Maintaining streets and roads in summer as well as winter is easy with a Baughman Spread Mobile. This sturdy "workhorse" may be used for spreading aggregates and dumping in the warm months, and for controlling ice in the winter. It is fully described in *Bulletin A*-37011. Write the BAUGHMAN MFG. CO., 150 SHIPMAN RD., JERSEYVILLE, ILL.

Improves All Types of Water Filters

288 Use Anthrafilt instead of sand in all of your city's water filter plants. This filtering medium made of crushed, precisely graded anthracite coal, doubles the length of filter runs, using only half as much wash water. It increases filter output with better quality effluent, and provides improved support to synthetic resins. For complete information, samples and quotations, write the PALMER FILTER EQUIPMENT CO., P. O. BOX 1696, 822 E. 8TH ST., ERIE, PA.

Miniature Train Increases Park Attendance

289 A sure way to increase park attendance and, at the same time, add to your city's revenue, is to install a Model G-12 Miniature Train, a popular kiddie ride easily operated by one attendant. The portable train is completely streamlined from locomotive to observation car, and requires a minimum of repair and maintenance. It is described in literature from the MINIATURE TRAIN CO., RENSSELAER, IND.

High-Speed Loader

290 During the construction season, the Adams TraveLoader loads all types of materials from both windrows and stockpiles. In winter, it is an ideal unit for high-speed snow removal and for loading abrasives into trucks. This versatile machine features a floating feeder, an adjustable conveyor, a high, centrally-located cab, and a wide range of working speeds. It is available from the ADAMS DIVISION, LeTOURNEAU-WESTINGHOUSE CO., INDIANAPOLIS, IND.

Build Better Bridges in Less Time

291 Using Amdek prestressed, pretensioned, concrete bridge superstructures, your city can save time, cut costs, and build beautiful bridges that give perfect, maintenance-free service for years. For detailed information, write the AMERICAN MARIETTA CO., 101 E. ONTARIO ST., CHICAGO 11, ILL.

Steel Barricades

292 Wherever traffic must be blocked off due to major street repairs or traffic accidents, install a low-cost Bear-I-Cade. This effective steel barricade sets up in minutes, and is easily transported from place to place. It features convenient lantern hooks, and is quickly joined with other barricades to form a lengthy barrier. Get full facts from the TRI-LINE CO., 921-931 CARROLL ST., RACINE, WIS.

(See page 46 for more Bulletins)

THE CLAMP WITH THE *Sealed Gasket and 3/4" Bolts!*

SKINNER-SEAL Bell Joint Clamps stop bell and spigot joint leaks under pressure. Speedy one-man installation cuts repair costs.

Gasket is completely SEALED and protected; at the bell face by a Monel Metal Seal Band; at the spigot by hard, vulcanized gasket tip, acting as a plug. Equalized pressure forces gasket into every crevice in the joint, sealing the leak at its source. Sturdy malleable iron Compression and Anchor Rings—shaped and pressure-tested before shipping. Large 3/4" bolts. Plated or unplated. Malleable iron bolts furnished on special request.

M. B. SKINNER CO.
Est. 1898
SOUTH BEND 21, INDIANA

SKINNER-SEAL BELL JOINT CLAMP

ONE GRAVELY TRACTOR
Powers 3 Mowing Tools!

Cut mowing costs—make only ONE investment in the power unit for ground maintenance tools. 5-HP Gravely gives you your choice—from 21 different tools—including three mowers!

REEL MOWER for fine lawns, quickly converted to 72" Gang Mower by attaching Gang Units. Add Sulky, cover more ground faster with less fatigue. ROTARY MOWER for lawn and weed cutting . . . with optional LEAF MULCHER assembly. SICKLE MOWER for tough weed and brush cutting jobs!

And remember, with Gravely, you have *twice* the power of the usual power mower!

PLUS 3 SNOW REMOVAL TOOLS

Snowblower, Snowplow, and Power Brush attachments make snow removal fast and easy . . . you change from job to job by removing and replacing only four bolts . . . suit the tool to the job or season in minutes!

PROOF...BY FREE DEMONSTRATION!

Yes, cut costs . . . and we will prove how you can . . . how you get more for your money when you get Gravely! A FREE demonstration is yours on request . . . *at no obligation.* Or write for "Power Vs. Drudgery" catalog, FREE!

Ask About New Gravely Starter

GRAVELY TRACTORS, INC.
BOX 73 DUNBAR, W. VA.

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Sweeps Streets Cleaner

293 In addition to the advantages of 3-wheel design, front steer and a hopper at the rear, the new Model "40" motor sweeper is equipped with right or left-hand gutter brooms, completely visible at all times. The unit is made for efficiency, dependability and safety by the AUSTIN-WESTERN CO., AURORA, ILL. Write for details.

Pneumatic Flow Meters for Water & Sewage Plants

294 The efficient operation of your water and sewage plants depends, in large part, on accurate, dependable flow metering. You can get this dependable metering with Builders pneumatic flow meters. These effective units permit simple, flexible installation, and are consistently accurate under low and high head. For *Bulletin* 285-*G2A*, write BUILDERS-PROVIDENCE, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I.

New Batch Mix Asphalt Plant

295 The H & B Type "T" batch mix asphalt plant is made in four sizes, producing from 60 to 180 tons of asphalt per hour. Completely new in design and engineering, it features a choice of power units, a new self-contained dust bin, a flat screen, self-contained overflows, and an individual trunnion roll drive on the dryer. For *Bulletin* T-55, write HETHERINGTON & BERNER INC., 737 KENTUCKY AVE., INDIANAPOLIS 7, IND.

Solves Swimming Pool Problems

296 The NATIONAL POOL EQUIPMENT CO. will assist your city in solving any problem connected with public swimming pools, including design, filtration systems, fittings and underwater lighting. A new catalog describes a complete line of equipment and supplies for building new pools and repairing existing facilities. For your copy, address the company at 2516 EIGHTH ST., NORTH BIRMINGHAM, ALA.

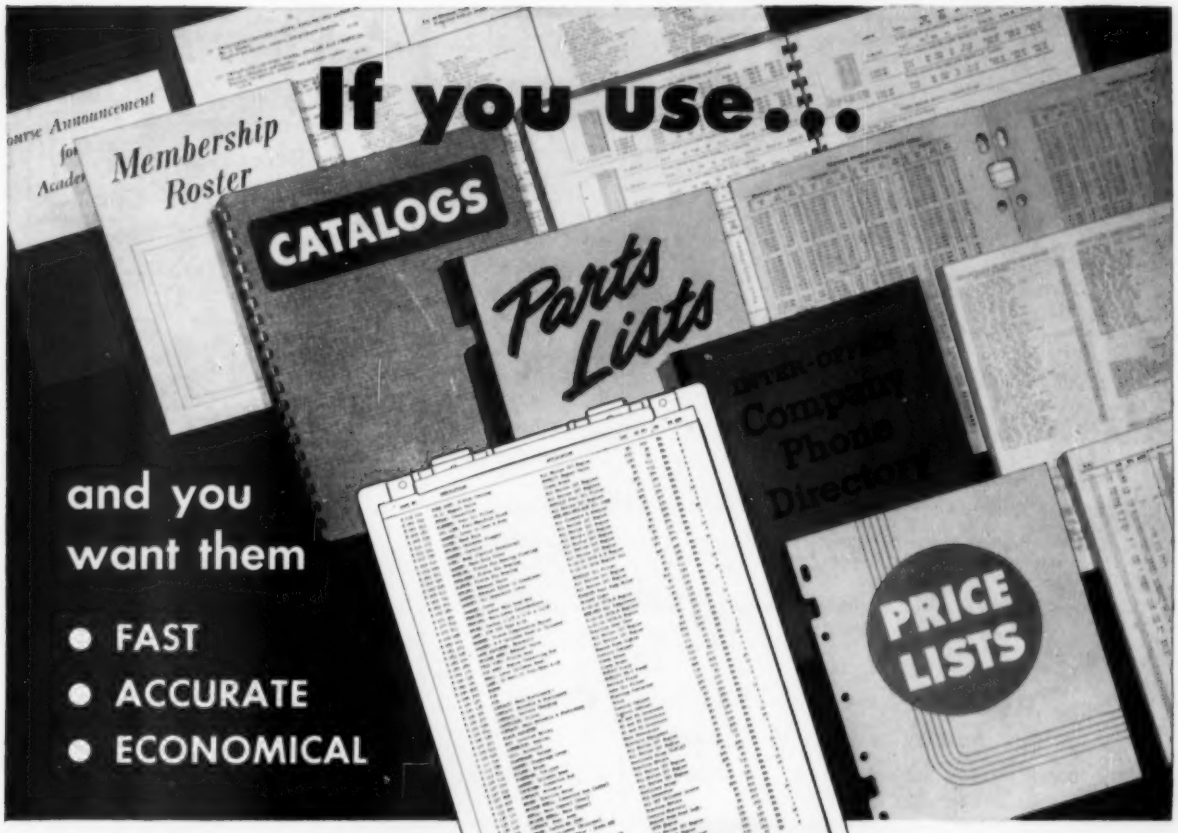
No More "Push-to-Talk" in 2-Way Communications

297 Easily installed in any municipal plant, school or hospital, the new Speaker Phone combines all of the advantages of loudspeaker inter-com with the privacy and clarity of telephone communication. It offers 2-way communication between a loudspeaker and all telephones in any of the Telecom automatic dial systems. The called party answers by talking in the general direction of the Speaker Phone, eliminating "push-to-talk" operation. Write TELECOM, INC., 1019 ADMIRAL, KANSAS CITY 6, MO.

Build Your Own Plant Laboratory

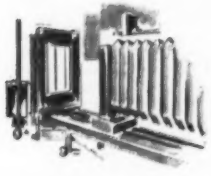
298 Small cities needn't incur the expense of extensive planning to build an efficient laboratory for water and sewage plants. Metalab's sectional laboratory furniture and the company's convenient room layouts for labs will help you do the job quickly and economically. A new 12-page brochure, *Catalog SD-2*, presents the various items of lab equipment plus complete specifications. Write the METALAB EQUIPMENT CORP., 214 DUFFY AVE., HICKSVILLE, L. I., N. Y.

(See page 48 for more Bulletins)



THEN YOU NEED ACME VISIBLE PHOTO PANELS

JUST TYPE



PHOTOGRAPH

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☐ Have representative call. Date _____ Time _____

Company _____ Attention _____

Address _____

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Type GK Go-Getter Self-Propelling Sewer Cleaning Nozzle

One of the many items in our complete line of Sewer Cleaning Equipment.

WATCH FOR ANNOUNCEMENT OF OUR NEW TURCO MAXI-POWER MODELS

Setting absolute new standards of strength, performance and operating ease.

Your Headquarters for Sewer Cleaning Tools & Equipment

Write for FREE Catalog

Turbine Sewer Machine Co.

DIVISION OF CHAS. H. STEHLING CO.

1303 North Fourth Street • Milwaukee 12, Wisconsin

KOHLER Electric Plants

for portable power... to cut work time

Move jobs faster with your own independent power where the work is done. Low-cost, compact portable model operates chain saws for pruning, and for cutting fallen trees after storms; also used for hedge trimmers, grass shears, carpenters' saws, drills, electric spades, pipe threaders and cutters.

Other sizes, 500 watts to 35 KW, for trucks, street repairs, police and fire departments, civil defense units, electro magnets. Automatic stand-by models for emergency service in hospitals, schools, sewage treatment and filtration plants and for communications, when central station service fails. Write for folder C-25.

MODEL 1.5MS, *1500 watts, 115 volt DC. Manual starting. Weight 101 lbs. Handles for carrying. Also 115 volt AC, 131 lbs.*

Kohler Co., Kohler, Wisconsin • Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Better Sewage Ejection at Lower Cost

299 Eliminate the need for complex piping, screens, impellers and shredders at your sewage-treatment plant with economical pneumatic sewage ejectors. These efficient units feature float and electrode controls, and a snap-action valve that's both float and pneumatically controlled. Full details are contained in *Bulletin S-50.* Write the BLACKBURN-SMITH MFG. CO. INC., 57 GARDEN ST., HOBOKEN, N. J.

Kills Unsightly Weeds, Grass and Brush

300 Solving your city's weed problems with the *right* chemicals is discussed in a new *Weed Control Booklet* available, without cost, from the CHIPMAN CHEMICAL CO., DEPT. 20, BOUND BROOK, N. J. The booklet describes a complete line of chemicals ideal for destroying unwanted weeds, grass and brush.

Improved Street Construction and Maintenance

301 Everything needed for the year-'round construction, maintenance and cleaning of streets, playgrounds, parking lots and airports, is described in a new brochure from STANDARD STEEL WORKS, NORTH KANSAS CITY, MO. The equipment offered by this company includes pressure distributors, construction brooms, maintenance distributors, and supply tanks and asphalt tools. Also tar kettles, street flushers and gravel spreaders.

Sturdy Equipment for Pools and Playgrounds

302 A full line of Fun-Ful equipment sure to attract crowds to park playgrounds and public swimming pools, may be obtained from GENERAL PLAYGROUND EQUIPMENT, INC., KOKOMO, IND. There are slides, swings, coasters and merry-go-rounds, all designed for long life and safe enjoyment. Also water chutes and slides, regulation diving boards, and removable pool ladders. Write for *Catalog No.* 26.

Keeps Birds Off Buildings

303 One application of Bur-Co bird repellent on the roofs and ledges of public buildings eliminates birds for at least one year, reports the BURR CHEMICAL CO., 3329 AUBURN, ROCKFORD, ILL. Bur-Co will not harm birds and has no chemical reaction on building materials. It is available in small tubes, 10-pound cans and 40-pound drums. Write for literature.

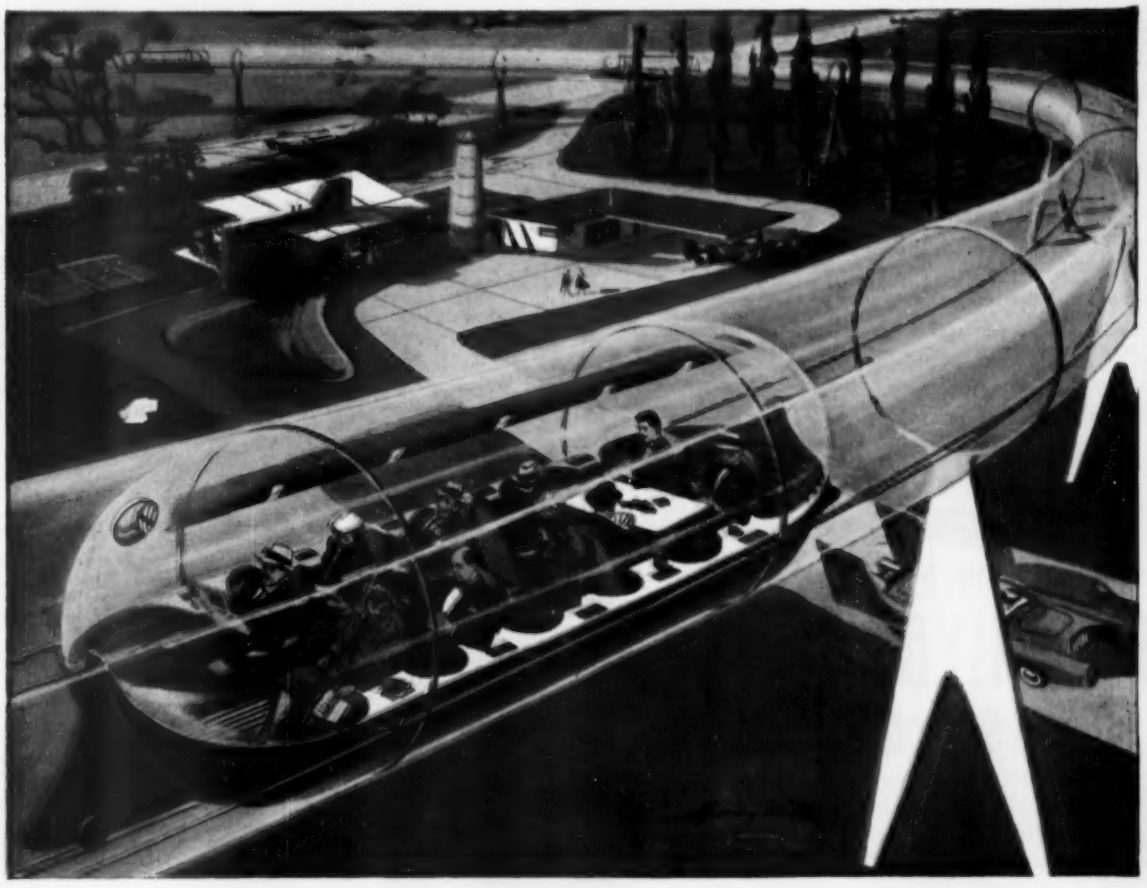
All Types of Badges

304 An informative catalog illustrating a variety of badges for police, fire, and other city officials is available from THE C. G. BRAXMAR CO., INC., 216 E. 45TH ST., NEW YORK 17, N. Y.

Surveying Instruments

305 The complete line of Gurley surveying and engineering instruments —including transits, levels, alidades and many others — are described and illustrated in a newly-revised edition of *Catalog 50.* For your copy of this informative 64-page booklet, write W. & L. E. GURLEY, TROY, N. Y.

(See page 50 for more Bulletins)



"TRAVEL CAPSULES" . . . air-conditioned, plastic-enclosed, propelled at high speeds along elevated tubeways . . . immune to weather, traffic delay, mechanical breakdown. Science is exploring its possibilities now.

100 years from now...

WE MAY TRAVEL BY VACUUM TUBE!

Many fantastic developments...today only dreams and lines on an engineer's blueprint...may become the commonplace of the future.

But in that world to come, one highly useful servant will continue its public service much as it does today. Cast iron pipe laid today will still carry our gas and water.

Records show that over sixty American cities are served by cast iron gas and water mains laid in the ground over a hundred years ago! And today, U. S. Pipe, centrifugally cast and quality-controlled, is even more serviceable.

U. S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

CAST IRON

U. S. PIPE AND FOUNDRY COMPANY, General Office: Birmingham, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Improved Illumination Indoors and Out

306 Two new publications cover transformers for luminous tubing operation, and for mercury lamp flood lighting and indoor illumination. The first is an 8-page booklet on outdoor, unenclosed, cold cathode, and indoor transformers. The other is a 20-page booklet on multiple circuit and constant wattage transformers for outdoor lighting, and single-lamp and 2-lamp transformers for indoor lighting. Write the JEFFERSON ELECTRIC CO., BELLWOOD, ILL.

Ends Corrosion Leaks

307 Because An-Spec Magnesium Anodes fully protect your underground and submerged metal surfaces, they are able to stop all water and gas line leaks due to corrosion. The company will supply high-quality magnesium anodes, experienced installation crews and competent engineering. Write the PIPE LINE ANODE CORP., BOX 471, TULSA, OKLA.

Submersible Water Pumps

308 PLEUGER SUBMERSIBLE PUMPS, INC., 960 HARRISBURG AVE., LANCASTER, PA., will help you select the proper submersible pump for your water-supply problem. These pumps range from ½- to 1,000-hp, for wells from 4 to 22 inches. They are available in capacities from 10 to 4,000 gallons per minute for operation in water wells, mineral springs, or brine wells.

1. **LESS OPERATING TORQUE!** New, non-binding upper and lower "O" rings trap lubricant . . . assure positive watertight seal . . . require no servicing.
2. **POP-OFF SLEEVE COUPLING** releases hydrant head from stem in event of traffic damage.
3. **GROUND LINE FLANGE** eliminates digging.
4. **90,000 TENSILE STRENGTH** Rolled Everdur threaded stem section completely eliminates stem failure.
5. **NO FLOODING.** Closed hydrant remains locked — even in event of traffic accident.
6. **NO FREEZING.** Positive drip action, at extreme bottom, assures complete drainage.

THE LUDLOW VALVE
ESTB. 1861 MFG · CO · INC · TROY · N · Y ·
CANADIAN LUDLOW VALVE MFG. CO., LTD., MONTREAL

"Electronic Brain" Aids Traffic Control

309 Electro-Matic Controllers, with modern "electronic brain" features, move traffic through intersections quickly and efficiently. How your city can avoid traffic delays and discourage violations, is explained in literature from the AUTOMATIC SIGNAL DIV., EASTERN INDUSTRIES, INC., NORWALK, CONN.

New Traffic Paint Has Plastic Base

310 A plastic base has been added to "Neolane" traffic paint, enabling it to withstand the heaviest traffic requirements. Centerlines and crosswalks of this long-wearing material can be applied with brush, spray or roller. The paint dries in only three minutes, and is ready for traffic in only 10 minutes. Write the GENERAL SIGNAL CO., 205 E. 6TH ST., CINCINNATI 2, OHIO.

Cleans Sewers Quickly

311 Cities can clean blocked sewers and drain lines quickly and economically with this new Hydraulic Water Ram. Working without chemicals or electric cables, the ram shatters hard grease, debris and other blockage into fragments. These fragments are then flushed down the sewer. The HYDRAULIC MFG. CO., DEPT. AC-11, KIEL, WIS., is offering a free 30-day trial of its Hydraulic Water Ram. Write for details.

Chain-Link Fence

312 Cities planning the erection of fence for security, safety, protection, or personnel and traffic control, are offered *Planned Protection*, a new 44-page brochure and reference manual on chain-link fence. This illustrated edition contains complete specifications on light and heavy chain-link fencing, describes 10 styles of Continental fence available, and shows various types of terminal and line posts. For your copy, write the CONTINENTAL STEEL CORP., KOKOMO, IND.

New Liquid Coating Protects Pavement

313 Used on driveways, parking lots, loading docks and airport taxiways, Jennite J-16 protects asphalt and blacktop pavements against frost damage, abrasion, the solvent action of gasoline and oil, and the drying effects of the sun. The new waterproof finish is easily applied over old or new surfaces by brush, squeegee or distributor truck. It is available from MAINTENANCE INC., WOOSTER, OHIO. Write for *Bulletin L-352-54*.

Simplifies Piping Problems

314 The Victaulic Method of Piping utilizes snap-on and bolted clamp-type couplings for the installation of steel, spiral, wrought iron, cast-iron and other pipe with grooved ends, collared or shouldered ends, or plain ends. For steel and other standard IPS pipe, these couplings are furnished in sizes from ¾- to 30 inches. Victaulic couplings for cast-iron pipe come in sizes 4- through 60 inches. Get *Catalog-Manual 54PR6* from the VICTAULIC CO. of AMERICA, 1100 MORRIS AVE., UNION, N. J.

Tree Trimming Equipment

315 Tree trimmers, tree pruners and climbers, brush cutters, tree paint, bark measuring tools, and a variety of saws are described and illustrated in a new, 32-page booklet from the BARTLETT MFG. CO., 3003 E. GRAND BOULEVARD, DETROIT 2, MICH. Also discussed are metal cutting shears, lawn sprinklers and pruning, budding and grafting knives. Write for *Catalog No.* 35.

(See page 52 for more Bulletins)

Catalogs for You

Elevated Water Tanks

Diesel, Dual-Fuel

Now Ring-Tite Joints

for RENSSELAER VALVES

RENSSELAER VALVE WITH "O"-RING SEAL AND RING-TITE JOINT.

Rensselaer Valve Co. in cooperation with Johns-Manville has adapted Gate Valves and Hydrants to the Ring-Tite Joint, developed by Johns-Manville for Transite Pipe. The first experimental installation of Ring-Tite valves was made in July 1953 at Mattapoisett, Massachusetts.

FAST AND SURE INSTALLATION

Rensselaer Ring-Tite Gate Valves and Fire Hydrants permit quick and simple installation with Transite Pipe. No special fittings are required and labor cost is low. Ring-Tite Bells provide tight, flexible joints.

During assembly, rings are inserted in the grooves, pipe ends are lubricated and the pipe is pulled in — sliding under the rings and slipping along until movement is stopped by shoulders on the pipe. A very simple puller is used and the job is accomplished quickly and with very little effort.

At low pressures, the seal is obtained by radial compression of rubber rings. At higher pressures, rings are wedged in the grooves tighter by the pressure.

Rensselaer Gate Valves with Ring-Tite Ends are available in sizes 4" through 12" for Class 150 Transite Pipe.

RENSSELAER GATE VALVES

Rensselaer Double Disc Parallel Seat Gate Valves are built rugged and simple, designed to give positive seating action and long life and are easy to operate, are made of high quality materials and conform to A.W.W.A. specifications. Rensselaer Gate Valves are available with "O" Ring Seals or standard packing.

Ask for Bulletins B and C.

Rensselaer VALVE CO. **TROY, N. Y.**

GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES • CHECK VALVES • AIR RELEASE VALVES

DIVISION OF THE LUDLOW VALVE MANUFACTURING CO., INC.

Catalogs for You

Write directly to the manufacturers or use coupon on page 29

Combination Lawn Mower and Weed Cutter

316 A swivel-type cutting head on the Ford Power Cutter follows the contours of flat, rough or rolling ground, simplifying maintenance work on parks and public lawns. The unit features a high-speed blade with an adjustable cutting height from 1 to 4 inches. The blade guard operates in down position for mowing; in a raised position as a weed bumper for cutting. A new leaf-mulching attachment eliminates raking and hauling operations. Write the WALTER BATES STEEL CORP., 500 MILLS RD., JOLIET, ILL.

Elevated Water Tanks In Many Capacities

317 Horton elevated tanks provide a dependable gravity pressure water supply for emergencies, help to decrease pressure variations, and reduce pumping costs. Sizes range to 3,000,000 gallons. For additional data, write the CHICAGO BRIDGE & IRON CO., CHICAGO, ILL.

Industrial Waste Treatment

318 If your city houses an industry that contributes a particularly troublesome waste to your sewage system, you may be able to get help from KAIGHIN & HUGHES, INC., ATLANTIC & SPENCER ST., TOLEDO 1, OHIO. The company, specialists in industrial waste problems, is offering a new booklet describing the engineering services available in various fields. Copies on request.

Diesel, Dual-Fuel and Gas Engines

319 Chicago Pneumatic engineers will work with your city in preparing plans and specifications covering the diesel, dual-fuel or straight gas engine that will best suit your requirements. How to get dependable power at lower cost, is discussed in literature from the CHICAGO PNEUMATIC TOOL CO., 8 E. 44TH ST., NEW YORK 17, N. Y.

Accurate Car Count Aids Traffic Control

320 A new traffic tally board, the Vary-Tally Multiple-Unit Reset Counter, features 12 keys, three on each side of the board, which count and classify all traffic entering intersections from any direction. The large-size finger keys are easy-to-read, enabling the operator to keep up with a rush-hour flow. They are constructed of corrosion-resistant steel and will operate in any weather. Write VEEDER-ROOT INC., HARTFORD 2, CONN.

A Grease Seal for Centrifugal Pumps

321 Here is the way to make your centrifugal pumps happy. You correct those critical troubles that occur where the shaft enters the casing. You beat the problem of excessive heat, rapid wear, leakage and scoring—all with a Z-F grease seal that applies constant lubrication to packing and shaft automatically. Z-F grease seal prevents grit and foreign matter from entering the packing gland, stops leakage through the packing, keeps the packing soft and constantly lubricated, saves on grease and the operator's time, and doesn't introduce any new complicated parts that wear or break. Get the full story from ZIMMER & FRANCESCON, MOLINE, ILL.

How Fine Screens Simplify Sewage Treatment

322 Used in your municipal sewage treatment plant, a "North" sewage disposal screen will separate solid and liquid constituents in combination with sewage. It is described, along with specifications, capacities, a dimension chart, and illustrations of existing installations, in literature from the GREEN BAY FOUNDRY & MACHINE WORKS, GREEN BAY, WIS.

New Resuscitator Proves Effective Life Saver

323 Equip fire trucks and police emergency vehicles with the new Seeler Universal resuscitator, an effective instrument for administering automatic artificial respiration. The unit was developed by Henry Seeler at the Wright-Patterson Air Force Base, and is called the most efficient resuscitator-inhalator-aspirator in use today. It is available from GLOBE INDUSTRIES, INC., MEDICAL & HOSPITAL DIV., 1784 STANLEY AVE., DAYTON 4, OHIO.

Digs Holes Quickly

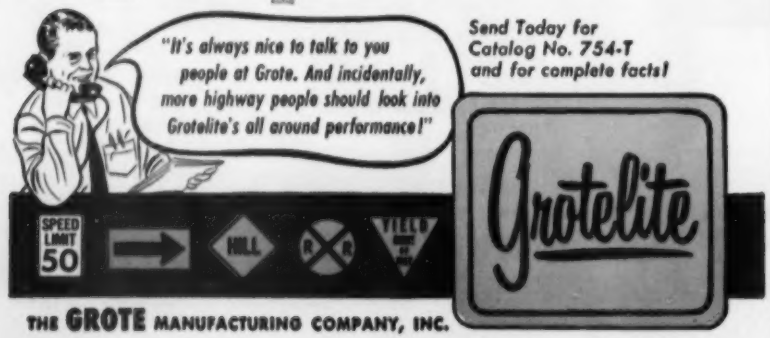
324 In addition to digging holes for setting fences and guard rails, this portable, medium-size digger is ideal for foundation work, soil sampling, driving pipe, and blast-hole digging. The standard unit bores holes up to 20 inches in diameter and 10 feet deep. Using sectional, continuous flight augers, it digs up to 75 feet deep. The new "AP" digger is available for mounting on a jeep or power take-off truck, or as a skid-mounted unit with a self-contained power plant. Get full details from the ACKER DRILL CO., INC., SCRANTON 3, PA.

Although Grote tries to avoid superlatives, actual road and laboratory tests prove . . .

Before You Place Another Order For Reflective Material or Reflectorized Signs, Shouldn't You Examine These Facts on Grotelite SS!

1. Outstanding Target Value!
2. Rugged, Smooth Surface!
3. Entirely Weatherproof!
4. Important Savings!
5. Extra Years of Reflective Service!

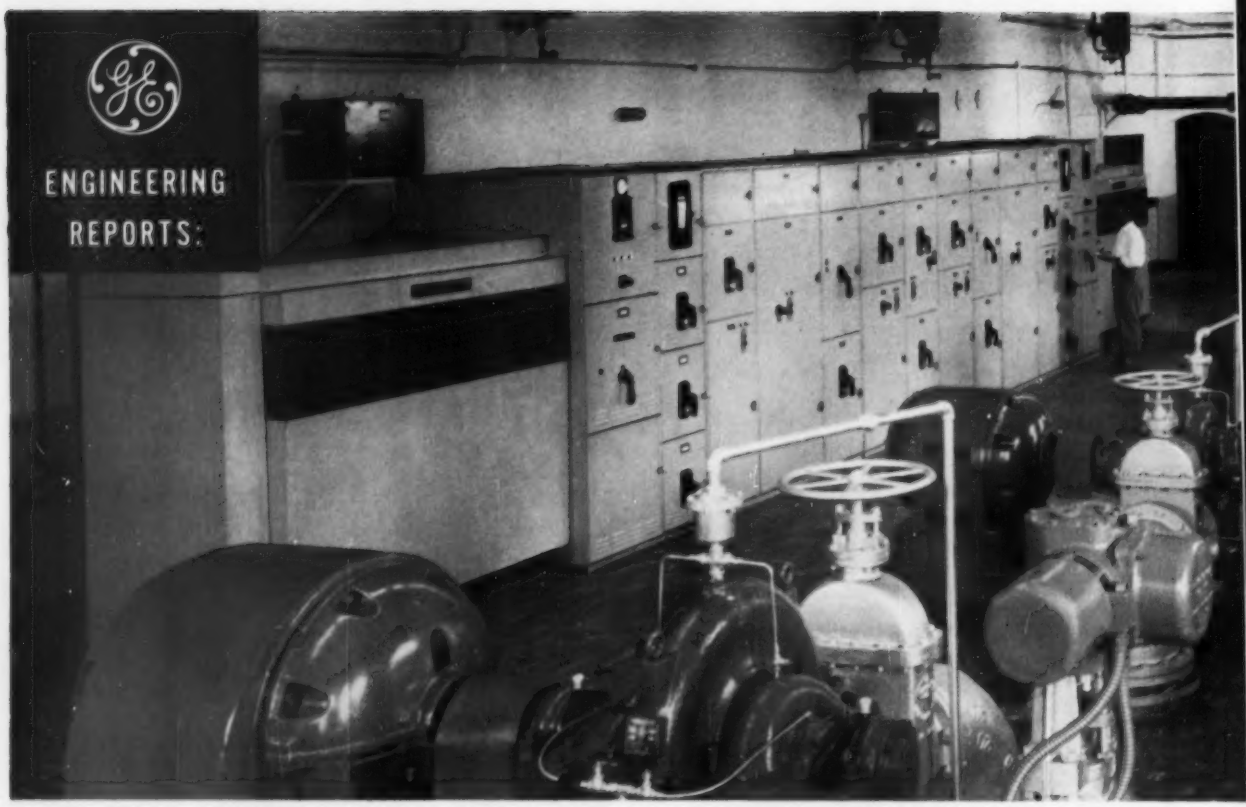
These are the simple facts of the matter. And if superlatives are involved, it's only because Grotelite tests actually bear out such facts. Grotelite reflectorized signs have over 26,000 reflecting lenses per square inch . . . acrylic plastic durability . . . all-weather performance . . . complete economy! Just a few of the many reasons why more states, counties, cities, and municipalities are looking to Grotelite SS for brighter, safer, more durable reflectorized signs!


"It's always nice to talk to you people at Grote. And incidentally, more highway people should look into Grotelite's all around performance!"
SPEED LIMIT 50
HILL
R R
YIELD
Grotelite

Send Today for Catalog No. 754-T and for complete facts!

THE GROTE MANUFACTURING COMPANY, INC.
ESTABLISHED 1901 • BELLEVUE, KENTUCKY • OPPOSITE CINCINNATI

See you in CHICAGO
we will be glad to welcome
you at booths 9 and 10—
Headquarters at Conrad Hilton
WORTHINGTON-GAMON METER DIVISION
Worthington Corporation
NEWARK NEW JERSEY

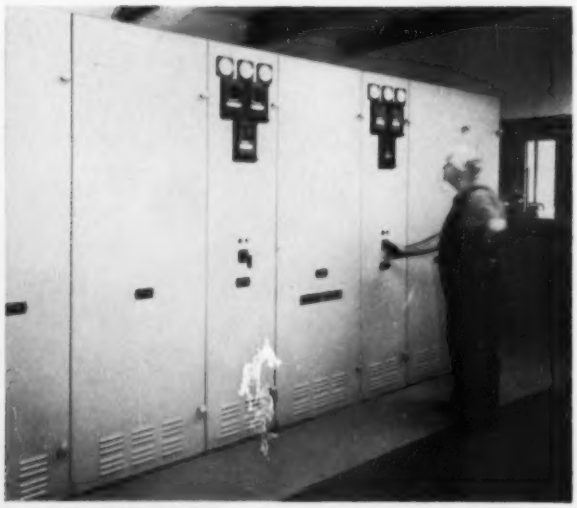


MODERN, CONVENIENT main pump room—formerly maze of pipes and flywheels—houses pumps, compact Tri-Clad* motors, economical load-center unit substation. Centralized grouping of all related equipment eases and simplifies operation, maintenance. Easy-to-install G-E equipment helped smooth conversion from steam while plant maintained continuous service.

Equipped with G-E electrical system . . .

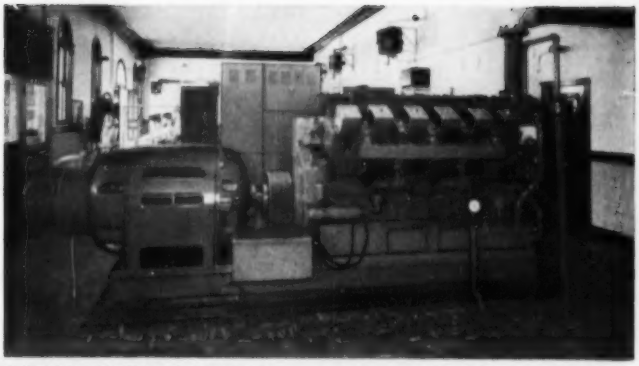
Remodeled Tonawanda, N.Y. waterworks

HIGHLY DEPENDABLE Tri-Clad* motors drive low-service pumps. Favored by industry, G-E motors need less servicing.



RELIABLY PROTECTING system equipment, medium-voltage metal-clad switchgear features easy-installation, maintenance.

*Reg. trade-mark of General Electric Co.



EXTRA POWER RELIABILITY is provided by stand-by, Tri-Clad* a-c generator with direct-connected exciter. These sturdy generators can furnish power for pump motors during emergencies.

EFFICIENT unit substation brings high voltage close to load, integrates related equipment; consists of G-E Cabinetrol* panel flanked by drawout air circuit breakers, dry-type transformers.

saves $12,000 yearly on power costs

G-E drives replace steam, help increase capacity, cut maintenance

Foreseeing need for more efficient, economical water supply to serve growing population and large industrial needs, Tonawanda, N. Y. city officials modernized their water pump station. Built in 1892, station used steam pumps requiring much maintenance and operating attention, and about $2550 for fuel monthly.

DEPENDABLY POWERED by G-E electrical system, station now features simplified, efficient operation, has $1200 monthly electric bill (plus $333 oil for building heat)—20% greater capacity! Mr. Oscar Schulte, Superintendent of Water Dept. says, "The only thing we need with this electrified system is a dust cloth to occasionally wipe off the motors."

G-E engineers worked over a year with city and plant officials, Metcalf and Eddy consulting engineering firm of Boston, and consulting engineer Frank S. Wahl to prepare proper plans and specifications. Working with general contractors, International Chimney Corp., and electrical contractor, Bison Electric Construction Co., of Buffalo, they facilitated shipment, installation of equipment so plant service was uninterrupted.

THIS SAME HELP can pay off for your water program. G-E engineers are ready to work with you and your consultants to fit the right equipment into a system tailored to your needs. Call on G-E engineers early in planning, when they can be of most value. Contact any G-E Apparatus Sales Office or write General Electric Co., Sect. 666-88, Schenectady 5, N. Y.

SEE NEXT PAGE . . . ▶

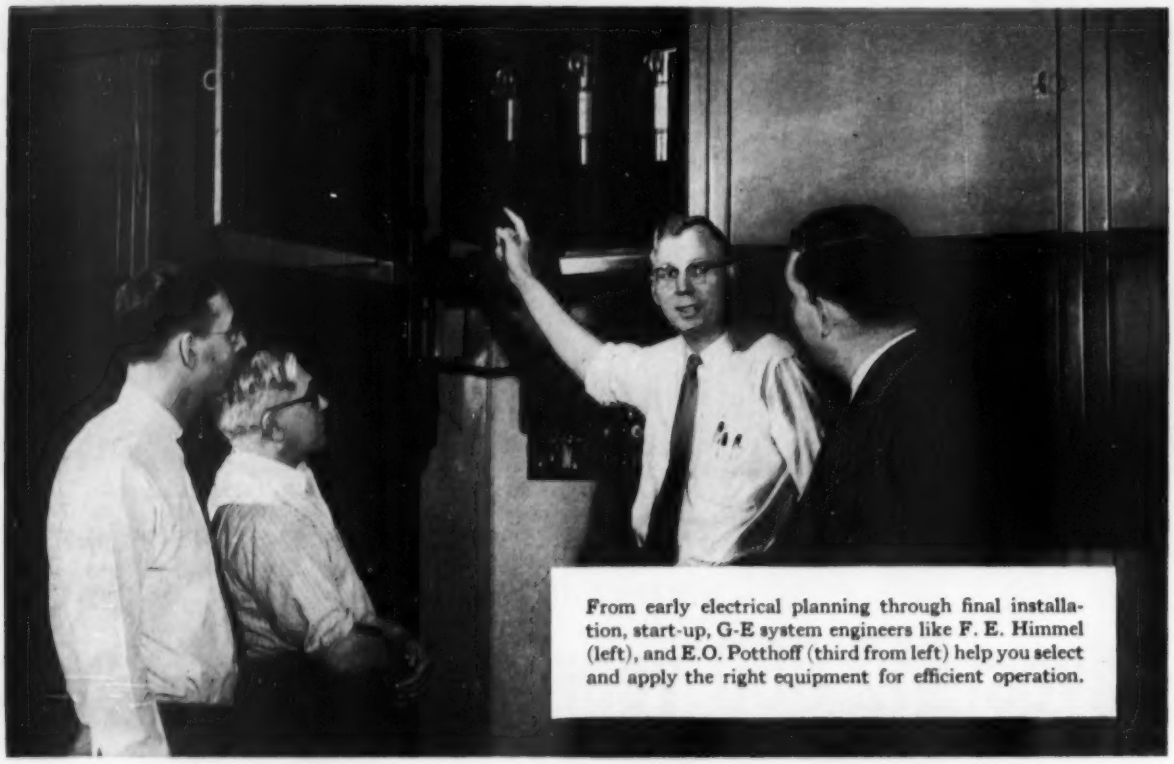
Engineered Electrical Systems for Waterworks

GENERAL ELECTRIC

SIX G-E ENGINEERING SERVICES...

HELP PROTECT YOUR EQUIPMENT INVESTMENT

Whether you are a city official, city engineer, consulting engineer, or a contractor, your G-E Apparatus Sales Representative can put any or all of these engineering services to work for you when you specify "G.E." Call him early in the planning phases of your water supply project.



From early electrical planning through final installation, start-up, G-E system engineers like F. E. Himmel (left), and E.O. Potthoff (third from left) help you select and apply the right equipment for efficient operation.

1 **G-E APPLICATION ENGINEERING** helps you and your consultants design the right electric system for your water plant.

2 **G-E ANALYTICAL ENGINEERING** helps attain the optimum electrical system for your application. Engineering experience backed-up by electronic system analyzers save valuable design time.

3 **G-E PRODUCT DEVELOPMENT** laboratories design and test new equipment under tomorrow's conditions to meet your future demands.

4 **G-E FIELD-SERVICE ENGINEERING** helps you supervise installation, expedite start-up of your major electric equipment.

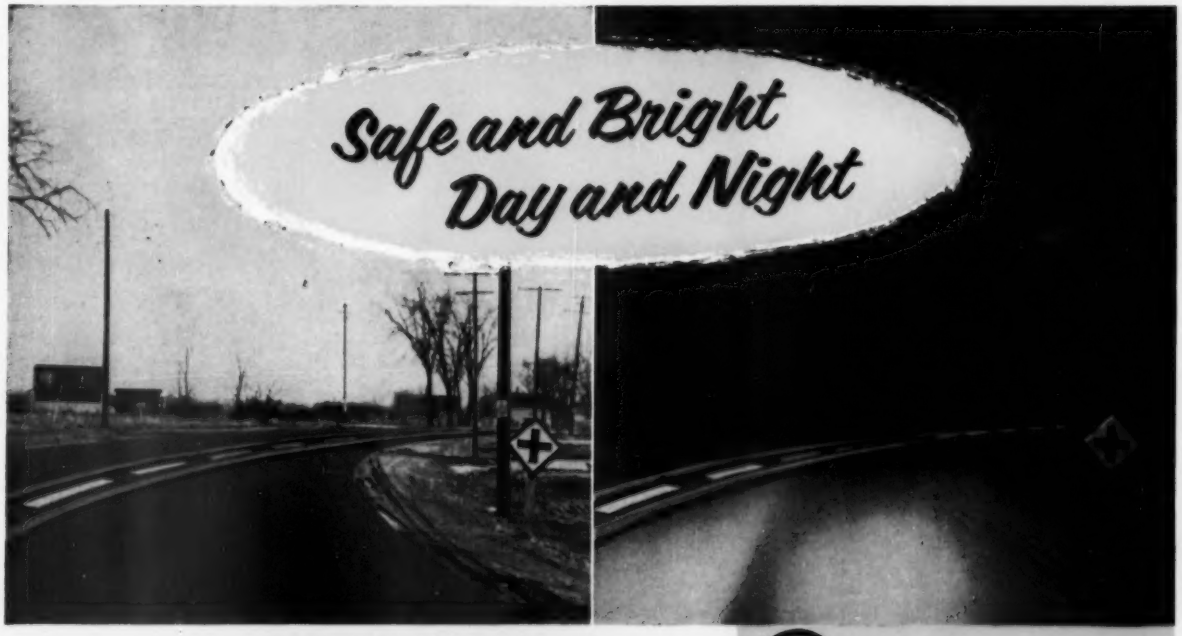
5 **G-E MAINTENANCE SERVICE** from 31 G-E Service Shops will repair and uprate your old equipment, help establish productive maintenance of your equipment, furnish emergency service.

6 **G-E PROJECT CO-ORDINATION** means on-time engineering, shipment, installation of your electric equipment from preliminary diagrams through start-up.

These valuable services are available to you with General Electric equipment. Contact any General Electric Apparatus Sales Office. Meanwhile, for the full story of G-E engineering services, write for brochure GED-2244, General Electric Co., Sect. 666-88, Schenectady 5, N. Y.

Engineered Electrical Systems for Water Works

GENERAL ELECTRIC



Highest Reflectivity with M-B SIGN KITS

Make your safety signs stand out and command attention day and night.

HY-LITE SIGN KIT for reflectorizing any sign or surface — metal, wood or plastic. Includes highest quality reflective beads, true color binder paint, and instructions.

M-B Hy-Lite Beads

- Highest percentage of perfect, crystal-clear spheres.
- Proven by test to be almost twice as bright as other beads.

M-B Superay Binder Enamel

- Firmly binds beads to surface.
- True-color reflectivity, day or night. Available in white, yellow, red, green, blue, black.
- Highest quality binder — specially compounded to enhance brilliance of M-B Beads — smooth textured — long lasting.

Low-Cost, Simple Application

- Binder-paint available for spraying, brushing, rolling or silk screen — as desired.

Amazing, Water-Proofing Liquid

- Applied like paint — brushed or sprayed on — has tremendous coverage.
- Positively sheds water — does not reduce sign brilliance — sign has over 60% reflectivity in rain storm.

M-B CORPORATION
NEW HOLSTEIN, WIS.

PACKER BODIES • SWEEPERS • LINE MARKERS
PAINTS AND BEADS

MANUFACTURERS OF QUALITY MUNICIPAL AND CONSTRUCTION EQUIPMENT SINCE 1907

M-B PAINTS and BEADS for Safety Lines

Good traffic control is insured with long lasting, highly visible traffic lines of M-B paints and beads.

HY-LINE PAINTS

Highest quality, long-wearing paint. Easy to apply — smooth flowing right from the can. Fast drying, tough and durable. Available for regular striping as binder-paint with highest bead retention.

HI-LITE BEADS FOR LINES

Durable, heavy-duty reflective bead for highway striping. Highest reflectivity — uniform quality and free flowing.

Prove it to yourself!

Send for test strip today.

M-B CORPORATION
New Holstein, Wisconsin

I would like to have an M-B test strip that will show me how brilliant M-B beads and paints really are.

Name_____

Title_____

Address_____

City_____ State_____

40 DEGREES BREAKOUT

HOUGH-DESIGN

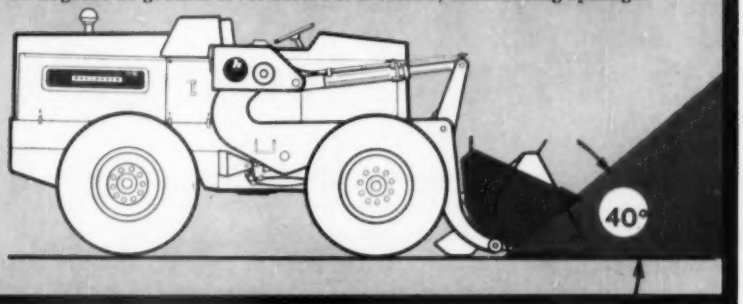
only these **2** completely different

PAYLOADER TRACTOR-SHOVELS

offer you all these features...

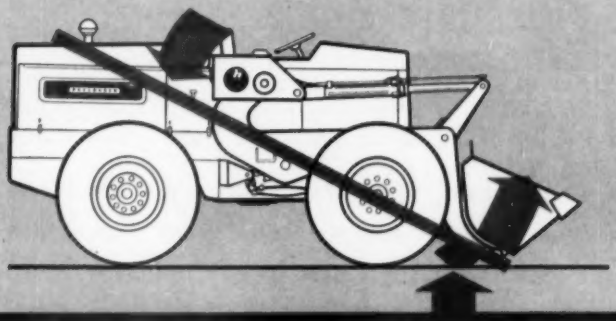
40 DEGREES BREAKOUT AT GROUND LEVEL

You can get HEAPED BUCKET LOADS and you get them FASTER and EASIER WITH THIS NEW BUCKET ACTION. Most important of all—you KEEP BIGGER PAYLOADS—because the bucket can be tipped back a full 40 degrees at ground level before it is raised, eliminating spillage.



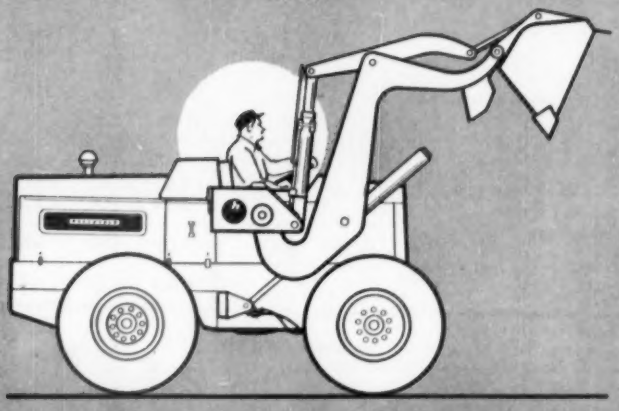
POWERFUL PRY-OUT ACTION

Tremendous pry-out force is obtained by using the breakout pads on the ground as a fulcrum for leverage. The load forces opposing the pry-out action are thus transferred to the ground through the pads instead of to the axle, wheels and hydraulic system of the machine.



SAFETY AND STABILITY

Underslung boom-arm design keeps moving members out of operator's reach at all positions—without using safety guards and screens. Longer wheel base and close, low, load-carry position provide maximum stability and balance.



HOUGH-DESIGN
HOUGH-QUALITY
HOUGH-PERFORMANCE

more horsepower

per bucket capacity than any other wheel tractor-shovel. Either gasoline or diesel power available.

easy to operate

Fullest operator visibility for safe, fast maneuvering; power-steering; minimum number of control levers. Foam-rubber molded seat and back cushions. Seat adjustable for operator comfort. Longer wheelbase and better balance add to riding comfort.

accessibility

Unusual accessibility for servicing and maintenance. Battery and oil reservoir are located under an easy-access cover just behind driver's seat. Sealed grease fittings. Exterior hydraulic line outlet provided for easy addition of hydraulically-operated accessories.

torque-converter drive

in conjunction with 4-speed, full-reversing transmission provides precise, easy control and the widest possible range of speeds for both forward and reverse. Acts as a shock-absorber for the entire power train.

other features

Closed, pressurized hydraulic system to keep dirt and air out of oil; powerful hydraulic brakes; double-acting hydraulic cylinders and chrome-plated piston rods; 12-volt electric systems on gas-powered models; forward and backup driving lights; tail lights.

THE FRANK G. HOUGH CO.

Send me full information on the new model HH and HU "PAYLOADER" tractor-shovels

☐ Model HU–1 cu. yd. ☐ Model HH–1½ cu. yd.

Name.....

Title.....

Company.....

Street.....

City.....

State.....

HOUGH SAY "HUFF"

PAYLOADER®

MANUFACTURED BY
THE FRANK G. HOUGH CO. · LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

IH

Planning a force main? Remember...

You can't beat Steel Pipe For Strength

When you're pumping water under pressure, you can rely on Bethlehem Tar-Enameled Water Pipe. It stands up under the toughest conditions—with plenty to spare. The chart below shows one good reason why.

Here are some more reasons: Bethlehem Tar-Enameled Water Pipe has the *resilience* to withstand the pounding of heavy traffic; it has the *beam strength* to span washouts; and it has a smooth *coal-tar enamel lining* that resists corrosion and ensures high flow coefficients, year after year. Whether you use mechanical couplings, welds or rivets, you get a tight, leak-proof line. And, remember, we are equipped to produce lined, coated and wrapped pipe up to 96 in. ID at our Steelton, Pa., pipe shop.

That's only part of the story about Bethlehem Tar-Enameled Water Pipe. For complete information, may we suggest that you call the nearest Bethlehem sales office.

THEORETICAL INTERNAL PRESSURES OF STEEL PIPE

	1/4 in.			5/16 in.			3/8 in.			7/16 in.			1/2 in.		
DIAM	WT LB/FT	MAX WRK PRESS PSI	MIN BURST PRESS PSI	WT LB/FT	MAX WRK PRESS PSI	MIN BURST PRESS PSI	WT LB/FT	MAX WRK PRESS PSI	MIN BURST PRESS PSI	WT LB/FT	MAX WRK PRESS PSI	MIN BURST PRESS PSI	WT LB/FT	MAX WRK PRESS PSI	MIN BURST PRESS PSI
18	49	445	1390	61	555	1735	73	665	2080	85	775	2430	96	890	2780
20	54	400	1250	68	500	1560	81	600	1875	94	700	2180	107	800	2500
22	63	365	1135	78	465	1420	93	550	1700	109	640	1985	124	730	2270
24	69	335	1040	86	420	1300	102	505	1560	119	585	1820	136	665	2080
30	86	270	835	108	340	1040	129	405	1250	150	475	1455	170	535	1670
36	106	225	695	130	280	870	155	340	1040	181	395	1210	206	445	1390
42	119	195	595	148	240	745	177	285	890	206	335	1040	234	380	1190
48	137	170	520	171	210	650	203	250	780	236	290	910	268	330	1040
54				192	190	580	230	225	695	267	260	810	303	295	925
60				214	170	525	255	200	625	296	235	730	336	265	835
72							309	170	520	359	195	605	408	220	695
84							357	145	450	412	170	520	470	190	595
96	The recommended minimum wall thickness is approximately the pipe diameter divided by 165. Pipe having this diameter-thickness ratio, when backfilled and properly tamped, will withstand any depth of cover. For buried pipe, the recommended minimum thicknesses are shown immediately above heavy black line.									470	145	455	539	165	520
108													*611	150	465
120													*669	135	415

$$P = \frac{t \times T_s}{r}$$

P = internal pressure, psi
t = thickness, in.
T_s = allowable unit stress = 60% x 27,000 (yield point) = 16,000 psi
r = radius of pipe, in.

Based on use of ASTM A-283, Grade B Steel, 50,000 psi min. ultimate tensile strength.
*Under certain conditions stiffeners may be required to reduce deflections.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

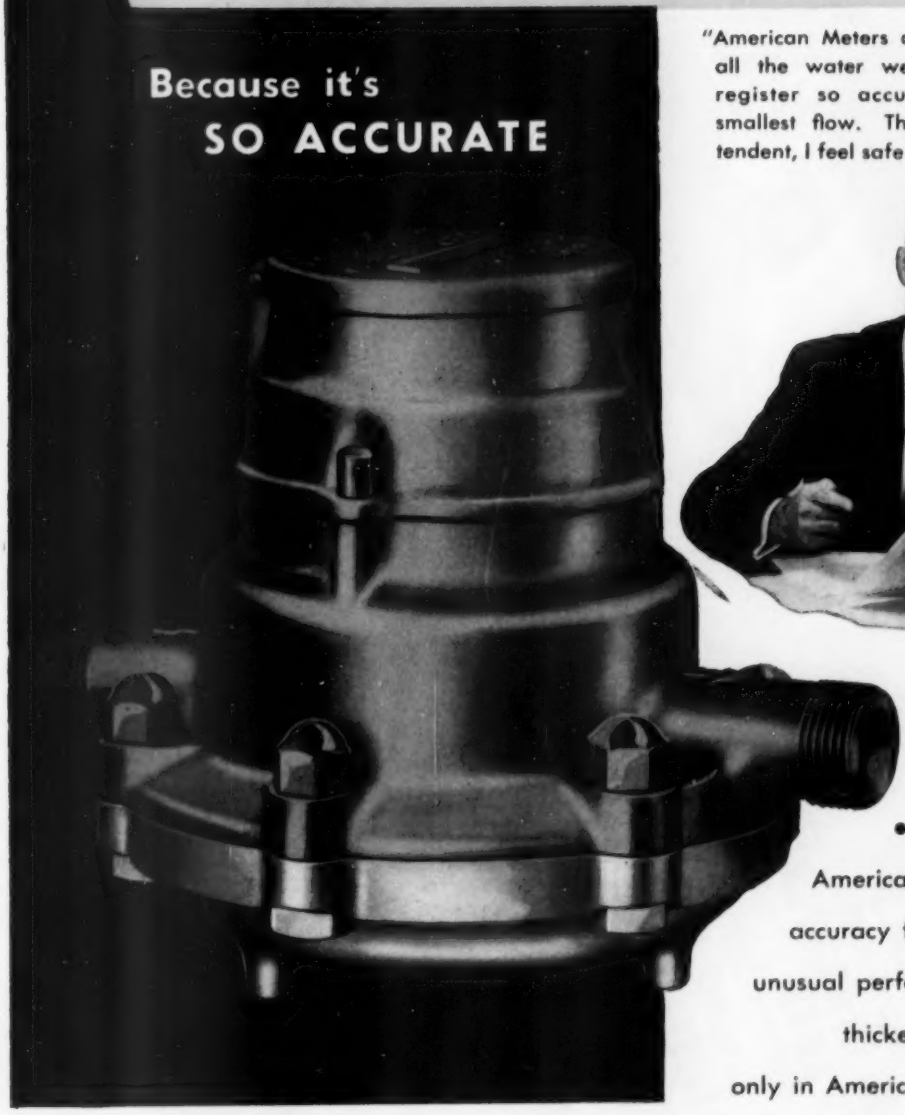
MANUFACTURED BY
THE FRANK G. HOUGH CO. · LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

City.....

State.....

The Safest Meter to Buy—
AMERICAN

Because it's
SO ACCURATE



"American Meters assure full revenue for all the water we pump because they register so accurately, even on the smallest flow. That's why, as Superintendent, I feel safe when I buy American."

• Repeated tests show American Meters sustain their accuracy for many years. Their unusual performance is due to the thicker measuring disc used only in American Meters. It forms a more efficient seal against slippage. The purpose of a meter is to measure the water. The safest meter to measure **all of it**, is American.

BUFFALO METER CO.

2902 MAIN STREET • BUFFALO 14, N. Y.

Introducing

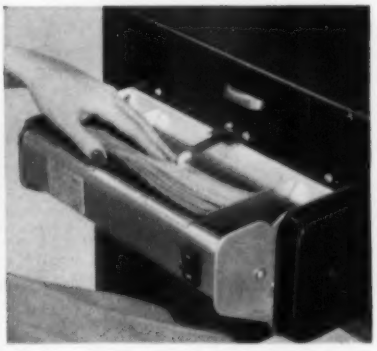
To suit your needs. You can photograph the fronts and backs of documents simultaneously side by side on 16mm film; or photograph the fronts down one side, then up the other . . . or across the full width of the film. A specially designed spacing control prevents film waste . . . gives you maximum number of images per foot with automatic or hand feeding. Glass document guides assure sharper pictures.

Eliminates a separate job of endorsing checks before deposit in your bank. The Reliant does it automatically in the fast, smooth microfilming run. The time saved quickly pays for the high-precision endorser unit, optional at slight extra cost. This accessory conforms with the Reliant's trim, all-metal design . . . becomes an integral part of the microfilmer when attached.

... the Recordak Reliant

... a sensational high-speed, low-cost microfilmer by the originator of modern microfilming. Check its plus features designed for even greater efficiency and economy in government record keeping

Just like having 3 microfilmers instead of 1. You'll be able to photograph your records at any one of three reductions . . . 40 to 1, highest in 16mm automatic microfilmers; 32 to 1; and 24 to 1. Thus, you can always get the right picture size for the job at hand. Takes only a minute to switch lens kits for desired reduction. (One lens kit is included in Reliant . . . other two are low-cost accessories.)



Stops double feeding. The Reliant's revolutionary high-speed automatic feeder sets new standards for accuracy . . . all but ends possibility of missed pictures. If two documents are stuck together, they're halted in feeder. More than 400 3x5-in. file cards . . . up to 140 letters can be photographed per minute. Slightly oversized documents (over 11 in. wide) can be photographed without a wrinkle or tear.

Here's extra protection. Two rolls of film can be exposed simultaneously at all three reduction ratios; and with all three microfilming methods. This is an important advantage when extra films are needed for off-the-premises or vault storage. Or when home office as well as branch office must have copies. Something else—the Reliant accommodates 200-ft. rolls of film, which cuts your film-loading operations in half.

Eye-level stacking. No stooping or reaching by your operator—she sees the documents pouring out . . . neatly stacked in sequence. Receiving tray can be adjusted immediately for varying sizes. All controls are at her finger tips . . . item counter and film-footage indicator can be checked at a glance. *All of these features*—plus many, many more—in the surprisingly low-cost Reliant.

MAIL COUPON FOR FREE BOOKLET R25

New, illustrated booklet gives you the full story on every plus feature—what's inside as well as out. Facts *you should know* so that you can compare . . . and get the *most for your microfilming dollar year after year.*

"Recordak" is a trade-mark

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—and its application to government routines

RECORDAK CORPORATION *(Subsidiary of Eastman Kodak Company)*
444 Madison Ave., New York 22, N. Y.

Name_____ Position_____

Agency_____

Street_____

City_____ State_____

Agile Oliver Hydro-Trencher digs 12-feet with ½-yd. bucket!

You can easily drive this compact, one-man trencher into spots where truck or crawler mounted units are helpless. Yet the Oliver 88WT is no small trencher. Its half-yard bucket digs to 12 feet and loads to 9½ feet. If you need more loading height, add the special hydraulic-trip loading bucket and dump at 12 feet.

The Hydro-Trencher has unmatched power and control for more profit in any digging. Two separate hydraulic circuits *keep* pressure on every move, even when you perform two operations at once. Dual controls provide speed and power variations for slicing through roots, rocky soil, hard clay, or delicately digging around pipes or foundations.

Wide bucket rotation permits fast dumping and high loading without spillage. Dirt or rocks can be clamped against the dipper stick and held at the highest level. Another thing—the trencher converts to a swing loader by simply turning the bucket around. The hydraulic stabilizer blade does two jobs, too. It holds the tractor level and steady, and doubles as a backfiller blade.

See this trencher in action. Test it yourself. Visit your Oliver Industrial Distributor. The 88WT Hydro-Trencher is available in either gas or diesel models. See it soon!

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

OLIVER

A complete line of industrial wheel and crawler tractors

This is the Oliver "OC-3" crawler with backhoe attachment. All-weather crawler traction makes the "OC-3" a handy unit for a multitude of trenching tasks. The "OC-3" takes bulldozers, front-end loaders and many other attachments, too.

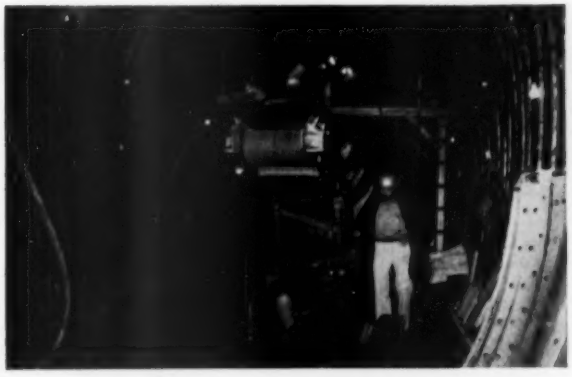
Another Oliver handy for trenching is the multi-purpose Super 55. Built-in hydraulics on this tractor operate a variety of front-, side- and rear-mounted equipment. The Super 55 is available with gas or diesel engine.

DALLAS, TEXAS

Three-man crew tunnels for trunk sewer in Dallas. Liner Plates are assembled from inside the structure, bolted together to form rings which are in turn bolted to adjoining rings along their flanged edges. Corrugated design and special joints make Armco Liner Plate the strongest of all tunnel liners on a pound-for-pound basis.

SEWER CONSTRUCTION

didn't stop traffic or business here!



LOS ANGELES, CALIFORNIA

This storm sewer was tunneled under a 6-lane street and 22 railroad tracks without disrupting traffic. Liner Plate sections were installed as the tunnel heading was excavated. Sections are readily handled by one or two men.

CHARLESTON, WEST VIRGINIA

Tunneling with Armco Liner Plate keeps work underground, out of the way. In Charleston, pavements and other surface installations were kept intact by putting down shafts and tunneling both ways with Armco Liner Plate.

Write For Complete Information

ARMCO DRAINAGE & METAL PRODUCTS, INC., 5475 Curtis Street, Middletown, Ohio.
Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO LINER PLATE

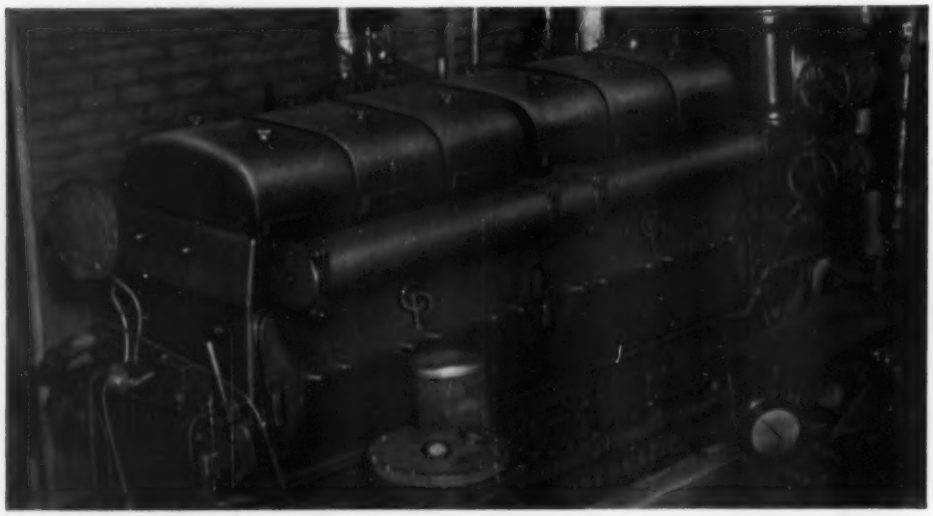
ARMCO®

This Tale of Three Cities

PROVES CP POWER VERSATILITY

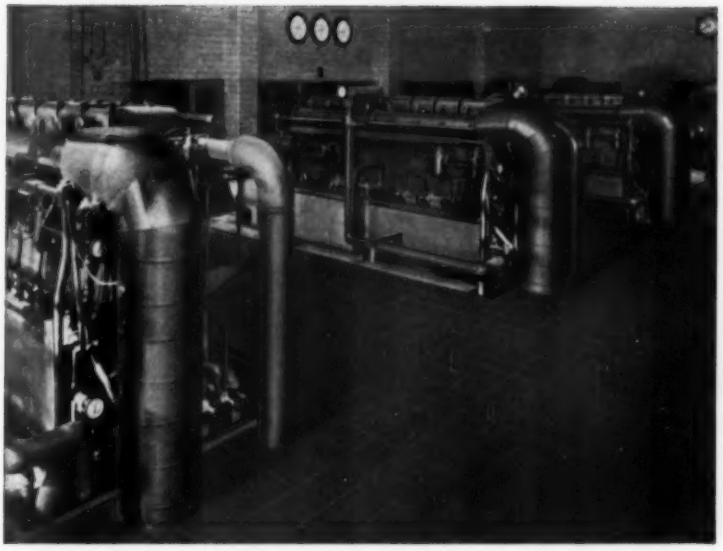
Let Chicago Pneumatic engineers work with you in preparing plans and specifications covering the diesel, dual-fuel or straight gas engine that will best suit your requirements. Here are three installations that typify Chicago Pneumatic's ability to supply dependable power at lower cost. *Chicago Pneumatic Tool Company, 8 E. 44th St., New York 17, N. Y.*

1



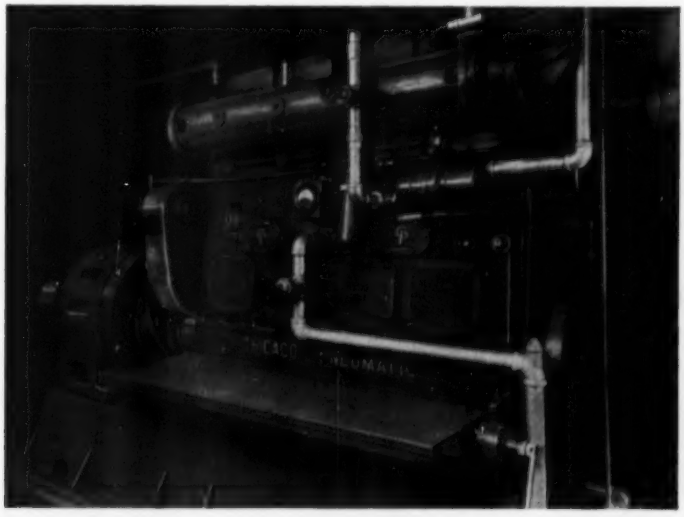
Two CP Diesels Keep the "Follies" On Ice—NEW HAVEN, CONN: A pair of Chicago Pneumatic Model 68 diesel engines generate over 1,000,000 kwh a year for the New Haven Arena. Besides furnishing light and power for the entire arena consisting of auditorium, parking garage, service station, block of stores, and executive offices, they also drive two 10x10 ammonia compressors for the manufacture of commercial ice in the summer and refrigeration for rink ice skating in the winter. Both engines are rated at 180 hp, 600 rpm.

2



Behind the Scenes "Lifeguard" Protects 12,000 acres of Playland—ROCKAWAY, NEW YORK: CP Dual-Fuel Engines play an important part in cleaning up the waters of Jamaica Bay. Used to generate power for the Rockaway Sewage Treatment Works, the CP engines are part of the Rockaway Pollution Control Project. The three Chicago Pneumatic Engines in operation at Rockaway are 306 BHP, 600 rpm. Dual-Fuel Types. Their ability to operate part time from waste sludge gives maximum operating efficiency and economy.

3



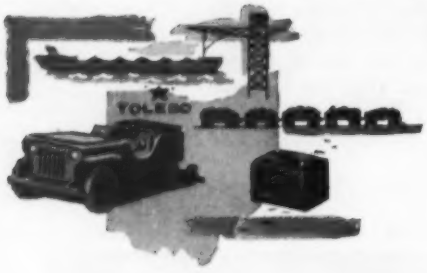
CP Dual-Fuel Does a Dual Job at Stratford—STRATFORD, CONN: Running off gas generated from waste sludge, a CP Slow Speed Dual-Fuel engine serves the city of Stratford, Conn. in two ways. It not only furnishes continuous power for all the motors at the Sewage Treatment Plant, but it also is used as a standby unit on 24-hour-a-day duty. In case of power failure the CP engine stands ready to operate pumps to lift untreated sewage above flood tide level and prevent street flooding.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Toledo Prefers

Concrete Pressure Pipe



Toledo engineers prefer concrete pressure pipe for the city's water supply mains. In 1948 an 8,600-foot installation, known as the Bancroft Street Crosstown Main, was completed. Since then 24", 36", 48" and 72" concrete pressure pipe has been used in major additions to the city's water supply system. Just recently contracts have been signed by Lucas County authorities and work is in progress on additional projects in the Toledo area, involving 16" and 24" pipe.

There are a number of reasons for Toledo's increasing use of concrete pressure pipe. Sustained high-carrying capacity and long life are two of the most important. Another is low maintenance cost. The original cost is also low and installation is accomplished quickly and easily.

Talk to Toledo engineers when you plan your next water line. You'll learn why they like concrete pressure pipe—not only for transmission lines, but for city distribution mains as well.

Member companies manufacture concrete pressure pipe in accordance with nationally recognized specifications

Concrete PRESSURE Pipe

WATER FOR GENERATIONS TO COME

AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION
228 North LaSalle Street
Chicago 1, Illinois

Getting ODOR Complaints?

You can end them with

ORTHOSOLV

The Chlorobenzene that **MIXES WITH WATER**

For Low-Cost, Easy Use!

Typical Applications of ORTHOSOLV

- **Incinerator smoke**
- **Sewage plants**
- **New excess-capacity sewers**
- **Drainage ditches**
- **Storm sewers**
- **Sewer breaks**
- **De-watering of sludge**
- **Fish market areas**
- **Land fill refuse disposal**
- **Refuse cans and trucks**
- **Dog kennels**
- **Rendering plants**

NOTE: ORTHOSOLV can be safely recommended to private individuals or business concerns for the elimination of odor-causing conditions.

ORTHOSOLV is a concentrated, 100% active material which affords effective odor control even when diluted with as much as *1 part to 100 parts of water!*

It has been used and proven effective in controlling odors from a wide variety of sources in municipalities all over the country.

ORTHOSOLV solutions are *low in cost* and easy to use with street flushers, pressure pumps and hand sprayers.

If you have a particular odor problem, write us giving details and we will be glad to send you our recommendations for controlling it. For FREE LITERATURE and TEST SAMPLES** use coupon below.

Other Applications of ORTHOSOLV

Orthosolv is also a highly efficient water dispersible solvent-cleaner for the removal of:

1. Grease and tar from trucks and equipment
2. Oils and greases from concrete floors

Orthosolv can be removed with a water flush or a steam jenny. Orthosolv is safe. It has a high flash point and is not a fire hazard.

SOLVAY

*Trade Mark
**In Western Hemisphere Countries only

Mail Coupon Today for Free Literature and Test Samples!

Allied Chemical

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

Gentlemen: Please send me WITHOUT COST OR OBLIGATION:**

☐ TEST SAMPLES

FREE LITERATURE:
☐ Orthosolv for Controlling Objectionable Odors
☐ Orthosolv for Use as a Solvent-Cleaner

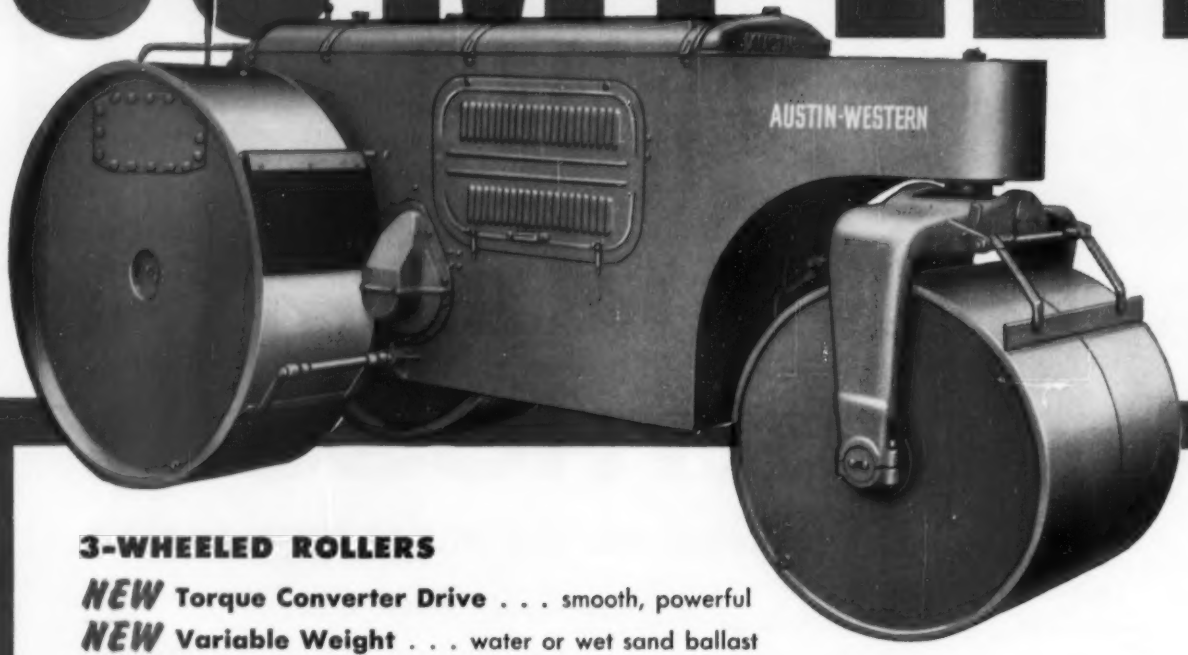
Name _____

Title _____ Affiliation _____

Address _____

City _____ Zone _____ State _____ DO-6

COMPLET



3-WHEELED ROLLERS

NEW **Torque Converter Drive** . . . smooth, powerful
NEW **Variable Weight** . . . water or wet sand ballast
NEW **Visibility** . . . with low center of gravity, and high ground clearance
NEW **Gasoline or Diesel Engines** . . . 2-speed or 4-speed transmissions
NEW **Torque Proportioning Differential** . . . maintains traction under difficult conditions
NEW **Accessibility** . . . servicing all assemblies is quick and easy

No. 1 feature of this brand new line of 3-wheeled rollers is Torque Converter Drive which controls power automatically, increases the life of power unit and clutches, cushions the reversing action, and provides an infinite number of speeds. In every detail, these machines are engineered and constructed to provide the superb, trouble-free performance that has characterized A-W 3-wheeled rollers through the years since Austin built America's first motor road roller in 1907. Made in 5-7, 6-8, 7-10, 8-11, 10-12 and 12-14 ton sizes.

Austin-Western

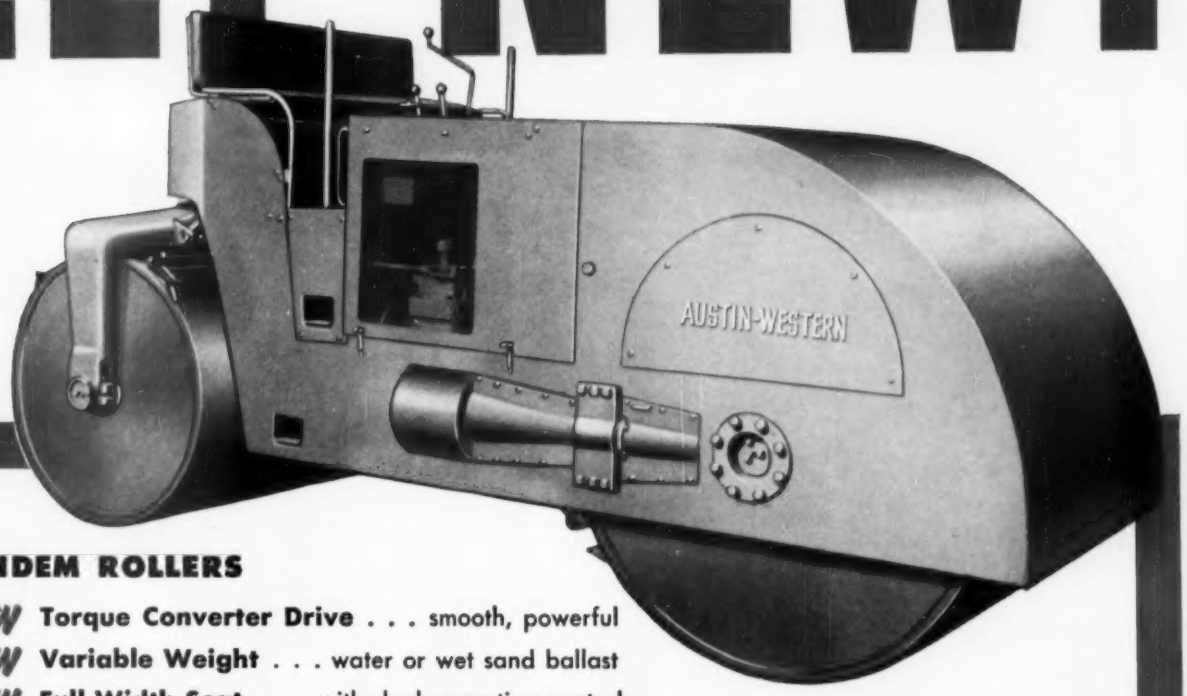
Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

ELY NEW!



TANDEM ROLLERS

NEW **Torque Converter Drive** . . . smooth, powerful
NEW **Variable Weight** . . . water or wet sand ballast
NEW **Full-Width Seat** . . . with dual operating controls
NEW **Visibility** . . . with low center of gravity, and high ground clearance
NEW **Gasoline or Diesel Engines** . . . 2-speed or 4-speed transmissions
NEW **Accessibility** . . . servicing all assemblies is quick and easy

While the Torque Converter Drive described on the opposite page is probably their most important feature, this new line of tandem rollers incorporates many other refinements designed to provide exceptionally smooth performance on precision jobs. Modern industrial engines furnish a smooth flow of steady power; uniform weight distribution eliminates side sway; effortless hydraulic power is used for steering . . . such features are your assurance of dependable, low-cost service. Available in 5-8, 8-12 and 10-14 ton sizes.

Get all the Facts ...

AUSTIN-WESTERN COMPANY
648 Farnsworth Avenue, Aurora, Illinois
Please send complete information and literature on Austin-Western Rollers.

Name .....
Title .....
Company .....
Street .....
City ..... **Zone** ..... **State** .....

Model 705-B Runabout Service Ditcher. Designed for scattered jobs. Vertical boom. Fluid Drive. Hydra-Crowd. 15 miles per hour travel. Widths up to 10½″. Depths to 4′.

DIG

DIG for profit.

DIG long jobs.

DIG scattered jobs.

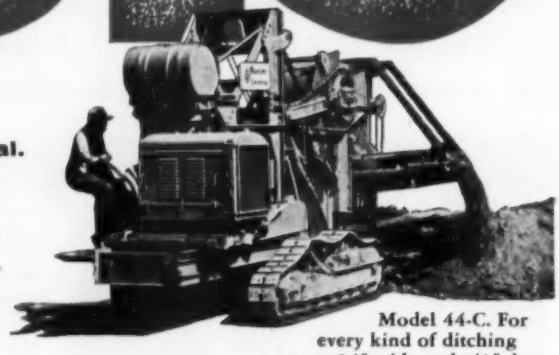
DIG with Hydra-Crowd and Fluid Drive.

DIG with new curved teeth that last 3 to 5 times longer.

DIG through frozen ground, asphalt pavement, coral rock—virtually any material.

DIG with the vertical boom that leaves no ramp, operates in closest quarters, digs right up to obstructions.

DIG with the machine that was engineered to DIG and get to the next job.



Model 44-C. For every kind of ditching up to 24″ wide and 8′3″ deep.

You don't have to DIG for the facts. They will be sent at your request. 54-33-D

Barber-Greene

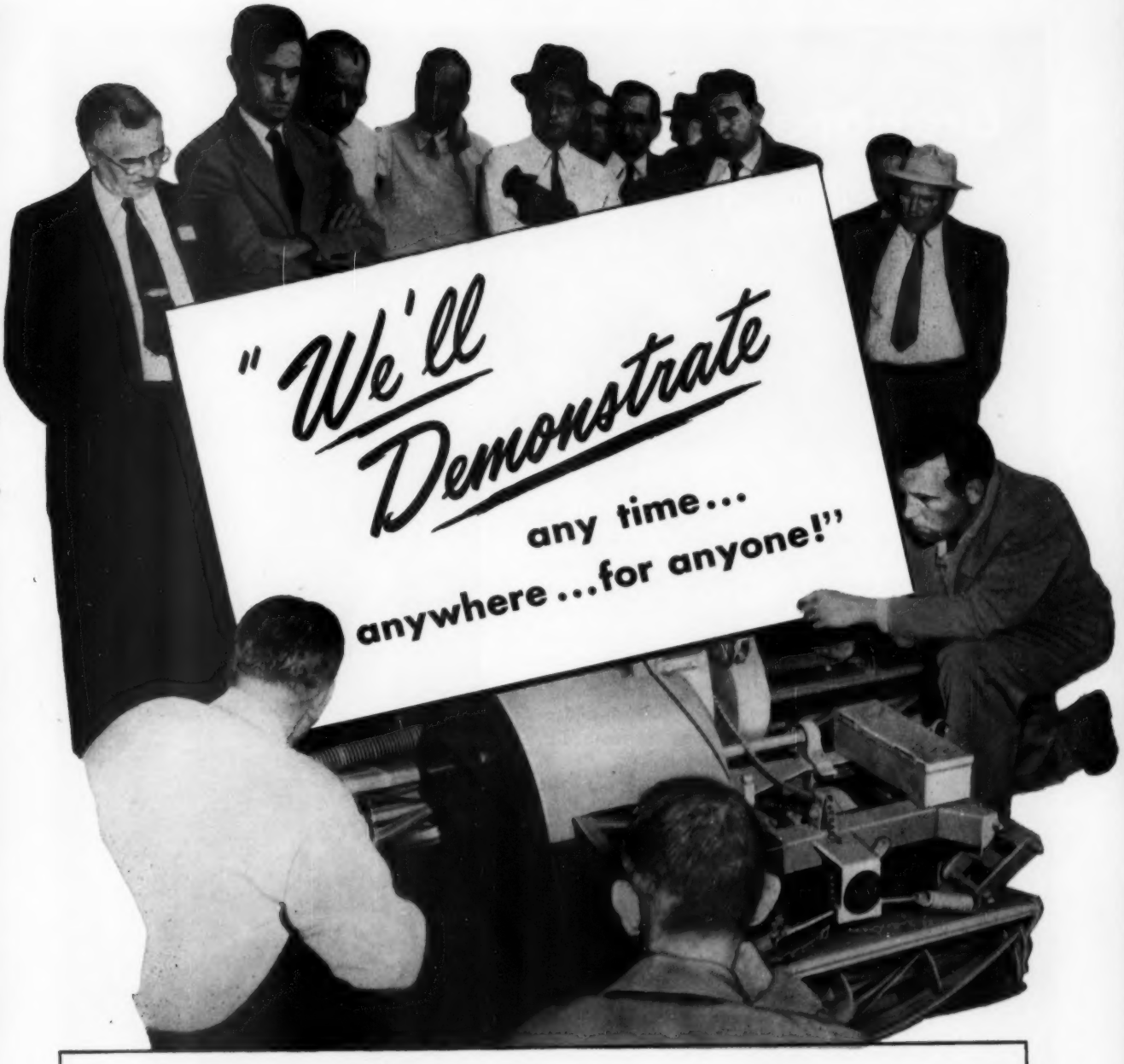
AURORA, ILLINOIS, U.S.A.

BG

WRITE for INFORMATION

descriptive literature . . . sound movies

cost studies . . . nearby job inspection . . . plant layouts



Here's the equipment—

Worthington equipment includes front-wheel-drive, dump body, and hill-hugging standard tractors; fairway and blitzer mowers in 3- to 9-gang combinations (standard and self-lift models) as well as self-powered and power-take-off rotary mowers.

Here's what it does—

Worthington Units are designed for heavy-duty mowing on golf courses, parks, highways, estates, cemeteries, airports and institutions. Whatever your mowing problem may be, Worthington has the *right* answer with the *right* equipment.

and here's the offer!

Worthington Mower Company, through Authorized Dealers, will — with no obligation — survey your mowing needs and demonstrate the right equipment for your requirements at *any time* and *any place*. Just write us — we'll do the rest.

Write for your demonstration, today!

The world's finest line of large-area mowing equipment

WORTHINGTON MOWER COMPANY

STROUDSBURG, PENNSYLVANIA

Beautify as you protect city equipment, water and sewage works,

Grandpa thought he was saving money...

"Yes, dear, 25 years ago grandpa was on the Water Board when they ran the pipe line out Madison Street to Western Heights. Grandpa and the other members voted to buy a substitute for cast iron pipe—they thought they were saving money. Now this pipe has failed entirely after years of expensive maintenance caused by breaks and leaks.

"Tonight we're letting a contract to replace that pipe. As Water Board chairman, I'm going to recommend the purchase of Clow Cast Iron Pipe—a pipe with a *proven* record of long service and low maintenance expense. It might cost a little more now than substitutes do, but it will be much less expensive in the long run. You might say that cast iron pipe is the taxpayer's friend—and Clow centrifugally cast pipe is the most economical of all. What's more, we've talked to other waterworks officials and Clow has a wonderful reputation for consistent high quality and excellent service."

Clow Cast Iron Pipe meets all currently approved specifications now in existence. Write today for factual information and case histories on Clow's 75-year-old reputation for economy.

JAMES B. CLOW & SONS

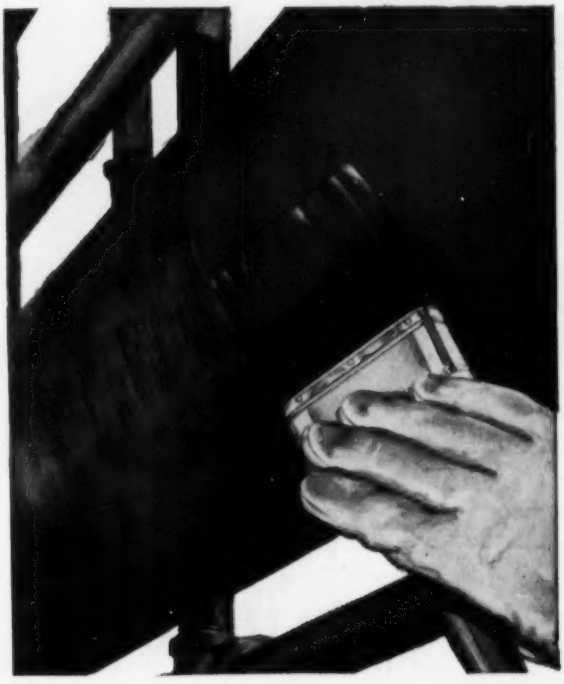
201-299 N. Talman Ave. • Chicago 80, Illinois

Subsidiaries: Eddy Valve Co., Waterford, N.Y.
Iowa Valve Co., Oskaloosa, Iowa

CAST IRON

Beautify as you protect city equipment, water and sewage works, fences, stop signs, fire hydrants, street lights, tanks, trucks, etc.!

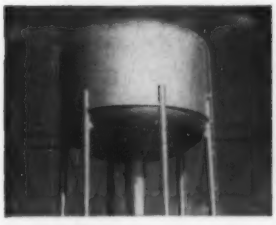
RUST-OLEUM saves time, money, and metal!—and beautifies as it protects! Brush RUST-OLEUM 769 Damp-Proof Red Primer right over the remaining rust after scraping and wirebrushing to remove rust scale and loose rust! Easy as that to save even badly rusted metal! For colorful beauty, use any of RUST-OLEUM's distinctive finish coatings in ALUMINUM, RED, WHITE, GREEN, GRAY, BLUE, ORANGE, BLACK, and many others. RUST-OLEUM resists rain, snow, sun, fumes, heat, salt water, salt air, weathering, etc. to give you colorful, lasting protection. See your local classified telephone directory under Rust Preventives or Paints for nearest source of supply, or mail coupon today.



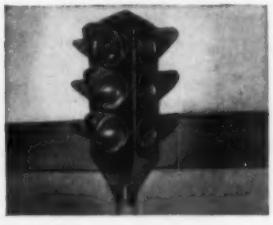
STOP RUST! with

RUST-OLEUM®

Available in Aluminum, Black, White, Red, Green, Gray, Blue, Orange and many others.



Water tanks, fuel tanks—all need RUST-OLEUM decorative beauty and lasting protection.



Stop lights, stop signs, and fire hydrants are another way to utilize RUST-OLEUM protection.

RUST-OLEUM matches such original manufacturer's colors as Harvester, Caterpillar, and many others for your tractors, trucks, etc.

Use bright RUST-OLEUM colors on your tanks, pumps, pipes, and machinery indoors and out.

Street lights need RUST-OLEUM's year 'round resistance to salt water, salt air, rain, snow, sun, fumes, heat and weathering.

You'll find RUST-OLEUM at work in water and sewage plants all over the country—giving decorative beauty and lasting protection.

ATTACH TO YOUR LETTERHEAD AND MAIL TO:

RUST-OLEUM CORPORATION, 2511 Oakton Street, Evanston, Illinois

- ☐ Please Send Me A FREE TEST SAMPLE To Apply Directly Over Sound Rusted Surfaces.
- ☐ Complete Literature With Color Charts.
- ☐ Have A Qualified Representative Call.
- ☐ Nearest Source of Supply.

Modernizing receipting procedures

PROTECTION—A SUBJECT EVERY ADMINISTRATOR SHOULD KNOW

Wherever money is collected, only mechanical receipting, such as provided by the Burroughs Receipting and Validating Machine, can protect and control receipts properly and efficiently. Rubber stamps or other manual receipting devices are not adequate to afford the three-fold assurance required:

1. Enforced correct accounting for monies the same day as received.
2. Protection for the cashier against honest mistakes.
3. Assurance that the payee receives full credit for his payment.

The Burroughs Receipting and Validating Machine marks the payer's bill "paid" and identifies it with a transaction number, date, amount, and cashier's symbol. As a by-product of the bill receipting, this information is recorded on a locked-in audit tape and the amount is automatically added to the day's receipts.

The payer's record is an exact duplicate of the record retained by your office. This additional record is made by simply pushing a key.

Our representative in your area will welcome the opportunity to point out additional advantages of the Burroughs Receipting and Validating Machine in terms of your particular application. Simply phone our local office, or write direct to Burroughs Corporation, Detroit 32, Mich.

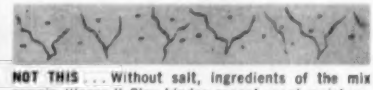
with the Burroughs Receipting and Validating Machine—provides complete reference data on every transaction for: *Payer* • *Payee* • *Cashier*

WHEREVER THERE'S BUSINESS THERE'S

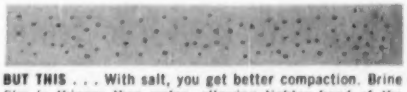
Burroughs is a trade-mark

3 BASIC REASONS WHY
STERLING ROCK SALT STABILIZED ROADS
Wear Better, Longer . . . with Less Maintenance!

1. Greater Compaction Means Greater Density!

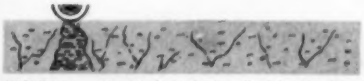


NOT THIS . . . Without salt, ingredients of the mix remain "loose." Clay binder cannot repel moisture. Excess rain makes rivulets. Dried out, they leave weakening crevices.



BUT THIS . . . With salt, you get better compaction. Brine film is thinner than water, allowing tighter bond of the whole mix. Clay, with brine, repels excess rain at surface. No rivulets. No weakening crevices.

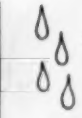
2. Greater Load Transference Means Longer Road Life!



NOT THIS . . . Unsalted road. Wheel of loaded truck puts a great weight on one point of surface. Roadbed supports load **vertically** . . . by only the structure directly beneath it.

BUT THIS . . . Salted road. Because of greater compaction, same load is diffused **horizontally.** Strain is spread outward and downward to about 40 inches at base to each surface inch.

3. All-Weather Resistance Means Lower Maintenance Costs!



EXCESS MOISTURE. Binding materials are not washed out. Clay, with brine, forms colloidal jelly. Repels excess rain, keeps it from weakening structural strength of mix.

EXCESS DRYNESS. Salt recrystallizes. Fills voids. Holds clay binder. Forms protective shield which retains some moisture in mix, resisting suction-like action of traffic.

FREEZING. Salt lowers freezing point. Frost does not penetrate. Prevention of below-surface freezing helps eliminate spring "heave" and pot-holing.

"Nature's own Soil Stabilizer"

For Base . . . Surface . . . and Shoulder Stabilization . . .

STERLING ROCK SALT

INDUSTRIAL DIVISION
INTERNATIONAL SALT COMPANY, INC., SCRANTON, PA.

FREE PAMPHLETS! Up-to-the-minute methods of highway construction and maintenance.
International Salt Co., Inc., Industrial Division, Scranton 2, Pa.

☐ Please send Road Stabilization literature.
☐ Please have representative call.

Name_____

Company_____

Street_____

City_____ Zone____ State_____

NICHOLS NEVER-STAIN

RUST-PROOF
Aluminum Alloy
CHAIN LINK FENCING

America's most beautiful, most maintenance-free fence

★ **RUST-PROOF** — Never requires painting. Cuts costly maintenance.

★ **LONG-LASTING BEAUTY** — Provides dignified protection to any area.

★ **ECONOMICAL** — No other fence in this price range offers all these advantages. Savings in painting alone will soon pay for the fence itself.

The ideal fence for parks, gardens, pools, sport courts, storage and equipment areas. Available in either No. 6 or No. 9 gauge Hi-Temper Aluminum Alloy Wire in 36" to 120" heights. "Never-Stain" 4-point Aluminum Barbed Wire also available in 1320 ft. spools.

Consult yellow pages of your local phone directory for name of nearest Nichol's franchised fence erector serving your territory, or write us direct, Address Dept. AC-1.

NICHOLS WIRE & ALUMINUM CO
Davenport, Iowa

CORROSION
is a luxury you can't afford!

PROTECT YOUR INVESTMENT WITH HARCO CATHODIC PROTECTION SYSTEMS

Harco can engineer and install a complete cathodic protection system to preserve your water storage tank, pipe lines, filter beds, flocculators, clarifiers, grit and sludge collectors, etc. Foremost in the field, Harco provides complete job-engineered systems or contract installations. To reduce excessive maintenance and replacement costs...and to eliminate corrosion ...specify Harco! First in the Field of Cathodic Protection.

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DEPENDABLE... in any main

Sizes ½" through 2"
Shipment from stock
Fully Warranted

Years of trouble-free service in mains of widely differing materials have proven the dependability and strength of Mueller Corporation Stops. A wide variety of inlet and outlet threads, a unique compression joint inlet, and other special inlets and outlets, are available to fit your needs — whatever they may be.

Designed for easy insertion under pressure, these stops are made entirely from the finest Water Works Bronze. All keys are precision machined and individually ground and lapped into the stop body. Each stop is carefully inspected and pressure tested. Exposed threads are coated with plastic to prevent shipping damage.

Consult your Mueller Representative, your W-96 Catalog or write direct for full specifications.

MUELLER CO. DECATUR, ILL.

Dependable since 1857

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It's the NET that counts!

Not how much your meters take in...
But how much your City takes in!

For that all-important net revenue, your total parking meter income must be balanced against:

INSTALLATION COST: New installations or replacements, Karparks are installed easily and quickly.

MAINTENANCE COST: Rugged Karpark construction assures maximum protection against vandalism, collision and the elements. Interchangeable mechanism for fast repairs without down time. Time limit changes handled on the spot without the services of skilled technicians.

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FOR TOP NET REVENUE – SPECIFY KARPARK!

KARPARK
TWIN-O-MATIC

Times two cars with one installation. Adjusts to any desired change in regulations. Reduces maintenance and collection costs to unheard-of lows. Ruggedly built for long life.

KARPARK
UNIMATIC

For single car parking. Can be used for an entire system of single car parking, or, when used with Twin-O-Matic, can be placed at street ends and special single locations.

FOR COMPLETE DATA WRITE TO
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CORPORATION
Cincinnati 6, Ohio

IN CANADA
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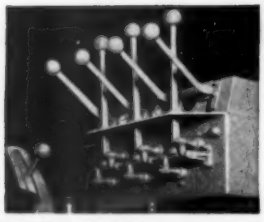
5002 Park Avenue
Montreal 8, Quebec

More "Big Machine" Features on the MICHIGAN C-16 than on any other ½-yard crawler!

This is a fact: more "big machine" features are *standard equipment* on the MICHIGAN C-16 than on any other ½-yard crawler. It will pay you to look underneath — look inside to see how much more you get for your money.

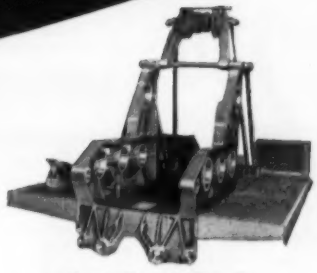
This machine is built for quality-conscious users—for bigger yardage, bigger tonnage, and substantially lower maintenance. The C-16 invites a feature-by-feature comparison with other same-capacity machines.

Write for detailed literature on this ½-yard crawler with big machine features and durability. Or contact your local MICHIGAN distributor. Like all MICHIGAN machines, the C-16 is available on a low-cost Lease Plan—details available.



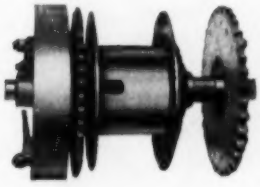
Power Control Independent Travel

Air Controls are standard on all MICHIGANs . . . fast, smooth, precise, with low operator fatigue. Independent Travel is also standard . . . move up while hoisting, swinging, or dumping.



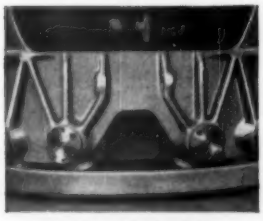
Cast Steel Deck

This feature is usually found only on 1-yd or larger machines. C-16 deck is one-piece, alloy steel casting . . . side frames, boom foot lugs and roller brackets are cast integral. No misalignment!



Power Load-Lowering

Four shafts on the C-16: Swing, Hoist, Travel and Crowd . . . each with its independent clutches. For precision crane work, the hoist line can be reeved on the front drum to provide Power-Up and Power-Down.



Six Hook Rollers

You can swing the boom just by leaning against it. There are 6 ball bearing-mounted adjustable hook rollers on the C-16 . . . grease twice a year. Most other ½-yd machines have only 3 or 4 rollers, bushing-mounted.

Smooth Clutches

There's nothing smoother than MICHIGAN air-operated segmented disc clutches . . . and they are self-compensating for heat, self-ventilating and self-cleaning. All segments are interchangeable.

Cast Steel Car-Body

Circle gear, with hook roller paths, internal gear teeth, center post, and crawler drive gear case is cast integral. Standard alloy steel tracks are 20″ wide, 9′10″ long. Swamp pads are optional: 30″ wide, 11′10″ long.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY, 416 Second Street, Benton Harbor, Michigan. (29A)

Construction Machinery Division

Phone: WA 6-6184

Please send literature:

☐ C-16 Detailed Bulletin

☐ MICHIGAN Lease Plan Bulletin

Name_____

Firm_____

Address_____

City_____ Zone____ State____

BEAT YOUR
MAINTENANCE
COSTS with GRACE

"EZ-ON"
TRAFFIC
SIGN
FACES

IN THE NEW RED or YELLOW

GIVE SAME SERVICE AT
THE ORDINARY COST! 1/2

You save real money, about half...if you use 'EZ-ON' Faces that slip on right over your present signs. Same high quality and they're reflectorized. In quantities AS LOW AS...

$2.80 EACH

APPLIED TO SIGN ON LOCATION
SAVES REMOVING SIGN TO SHOP

Now in the new RED (or Yellow as you may prefer), 'EZ-ON' Faces restore your old, defaced signs on location in less than 5 minutes! NO EXPENSIVE EQUIPMENT NECESSARY. Save time, save labor costs. Your maintenance problem is thereby solved!

THEY FIT OVER PRESENT SIGN
ATTACH IN LESS THAN 5 MINUTES!

1. Slip 'EZ-ON' Faces over old sign. Note wide flanges.

2. Then bend flanges backward holding 'EZ-ON' Face in place.

3. Use special Crimping tool to clamp flange and secure sign.

STANDARD COPY or YOUR OWN

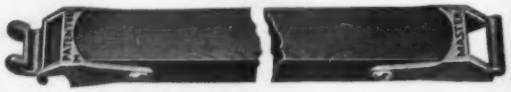
They're made of 30 ga. steel and in 2 shapes and 2 sizes, as shown above. Any standard copy..warning or regulatory or your own copy...as you may prefer. 'EZ-ON' Faces are solving the maintenance problem in many states and cities throughout the nation. Why not in yours?

SEND NOW DEPT. CA FOR SAMPLE SIGN and SCALE of PRICES . . . and SAVE!

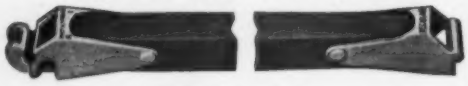
GRACE SIGN & MFG. CO.
3601 S. SECOND ST. • ST. LOUIS 18, MO.

SURE GRIP SEWER RODS and ACCESSORIES

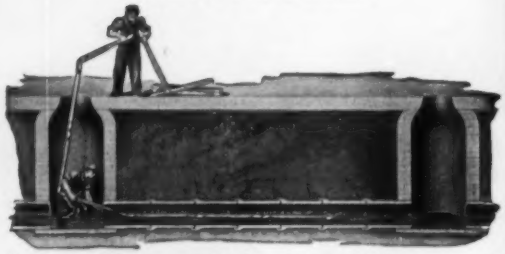
are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod, Fir stock 1½ x 1½ inch square.



The REGULAR, a light rod, Fir stock 1¼ x 1¼ inch square.



Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

Treasure Island sewer plant keeps appearance up, costs down... with RUSTARMOR®

• Maintenance economy plus attractive appearance—both are assured for the City of Treasure Island's sewer plant, St. Petersburg, Florida. RUSTARMOR is used as a protective and decorative coating on five—hundred-g.p.m. pumps and sludge pumps.

Public Works Director Ralph Milliken reports that this durable long-oil alkyd resin enamel is "the best we've ever used...provides economical protection and improves the appearance of our plant."

Here's why RUSTARMOR is so effective:

- **Prevents rust; inhibits rust.**
- **Stands up under severe conditions.**
- **Will never get sticky—it's hygroscopically controlled.**
- **Fade-resistant, regardless of weather.**

For exposed steel areas—tank exteriors, bridges, structural steel—be sure to specify RUSTARMOR. Available in eleven glossy, long-lasting colors. For fact-packed folder and color card CA-4, just write your name, title, firm name and address in margin of this page and mail.

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MAINTENANCE PAINTS DIVISION
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27-M South Park, San Francisco 7, California
INERTOL PROTECTION MEANS LOWER MAINTENANCE COSTS

☐ C-16 Detailed Bulletin

☐ MICHIGAN Lease Plan Bulletin

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City Zone State

PARK-O-METERS

light a city!

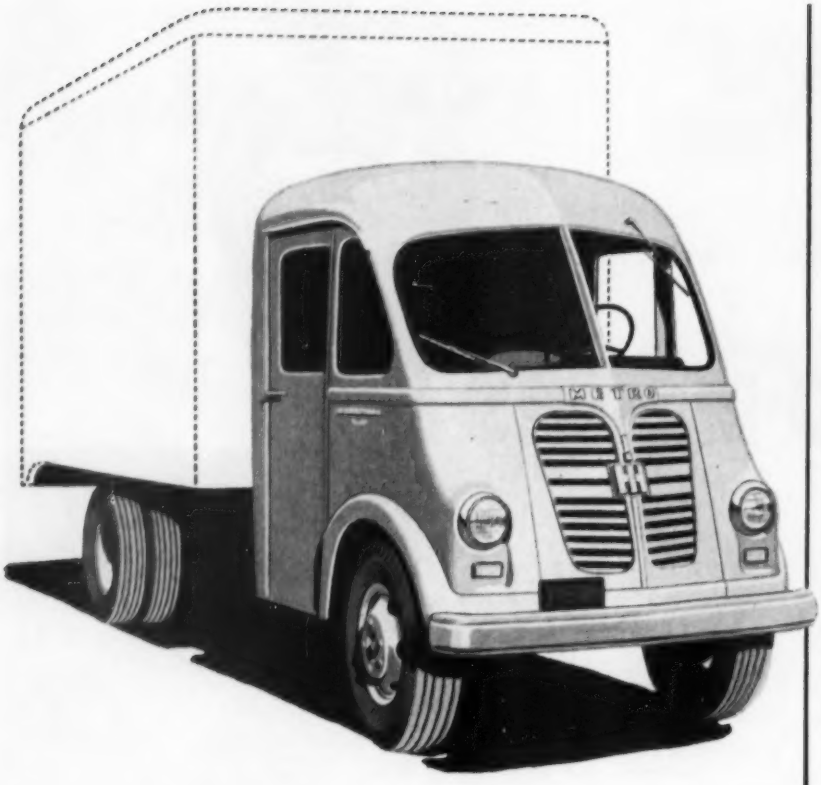
Pictured here is a portion of the Beloit, Wisconsin, downtown area where 20,000-lumen, 400-watt mercury-vapor lights yield an average of 1.5 foot-candles on the pavement . . . and 75% of the cost of this $58,052 lighting installation was supplied from revenues furnished by some 550 Magee-Hale PARK-O-METERS.*

We congratulate Beloit city manager, A. D. Telfer, on his wise use of those revenues for improvement of traffic and safety conditions. PARK-O-METERS will prove their value in your city

ASK US TO HELP YOU PLAN

BELOIT, WISCONSIN

**From American City Magazine, December 1954*



A New INTERNATIONAL Multi-Stop Idea for...

Beverages
Moving and Storage
Ice Cream
Refuse Collection
Wholesale Milk
Furniture
Department Stores
Wholesale Bakeries
Many Vocations Using Special Bodies

New "Walk-in" METRO® Cab Models

Here's big news from the 17-year leader in the multi-stop field. Now, INTERNATIONAL brings the advantages of famous METRO design and economy to a whole new group of multi-stop truck users.

This all-new multi-stop unit offers a new low-step "walk-in" cab to save driver time and energy. Its short bumper-to-back-of-cab dimension and 16,000-pound GVW rating provide exceptional payload capacity. It is easy to park and maneuver, saves space at dock and garage. It is available in four wheelbases and may be had with front section only for integral body construction, on all wheelbase lengths.

If you do multi-stop hauling using van, open or special bodies, it will pay you to investigate this INTERNATIONAL exclusive at your INTERNATIONAL Dealer or Branch. It's designed to save multi-stop time, boost multi-stop profits—built with famous INTERNATIONAL quality for lowest operating and maintenance costs. Get full facts—today.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

CONDENSED SPECIFICATIONS

Series. RM-160. GVW rating, 16,000 lbs.

Wheelbases. 137¾, 149¾, 161¾, and 179¾ inches.

Bumper-to-back-of-cab dimension: 78⅞ inches.

Engine. High-performance, high-economy INTERNATIONAL 131-hp Silver Diamond 240. 140-hp Black Diamond 264 optional.

Transmission. Four-speed Synchromesh. Five-speed direct or overdrive available.

Clutch. 11-in., single plate, cushion disc.

Cab Features. Low stepwell. Wide, deep windshield and windows. Comfort-designed steering post and toeboard angle. Easy engine accessibility. Folding, adjustable foam rubber seat. Helper's seat available.

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

Watch "The Halls of Ivy," with Ronald Colman and Benita Hume, CBS-TV, Tuesdays, 8:30 p.m., EST

INTERNATIONAL® TRUCKS
"Standard of the Highway"

Even with a limited budget you can

* End dust complaints!
* Reduce blading expense!
* Cut replacement costs!
* Provide smoother surfaces!

with the SOLVAY Calcium Chloride Road

All over the country, hundreds of municipal, county and township road departments have found the SOLVAY Calcium Chloride Road the *inexpensive*, easy way to convert unpaved, secondary roads into smooth, clean, consolidated surfaces. No major investment is required. The improvement can be made with local materials by your present staff of practical roadmen using basic equipment owned by most municipalities, counties and townships. Savings in reduced bladings and replacement of materials more than pay for the *entire* cost of the improvement.

Get All The Facts . . .

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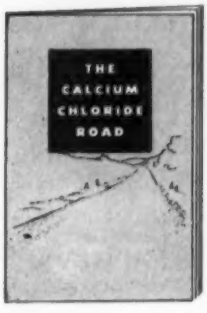

Contains important chapters on: What is the Calcium Chloride Road? — Why the Calcium Chloride Road Has a Low Maintenance Cost — Why a Calcium Chloride Road Has a High Salvage Value—How to Plan a Calcium Chloride Road — The Composition of a Calcium Chloride Road — How to Convert a Road Lacking Sufficient Aggregate or Binder Soil — Proper Drainage, Shaping and Blading — Application of Calcium Chloride — Summer and Fall Maintenance of Calcium Chloride Roads, etc.

WITHOUT COST OR OBLIGATION—send for your book—NOW!

SOLVAY CALCIUM CHLORIDE

for BETTER . . . MORE ECONOMICAL Municipal, County and Township Roads

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Please send me your FREE BOOK, "THE CALCIUM CHLORIDE ROAD."

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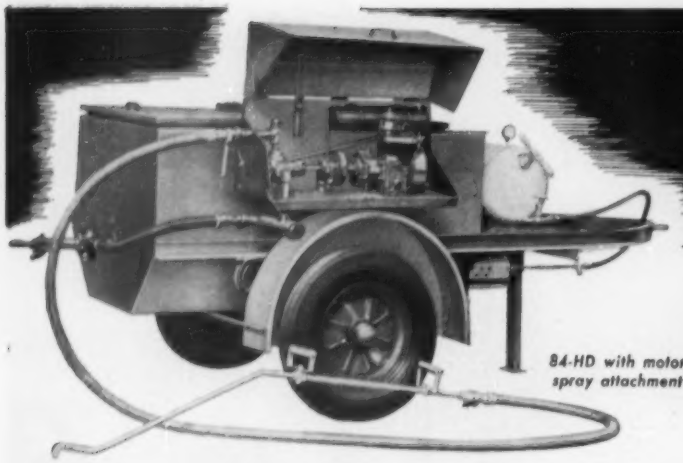

84-HD with motor spray attachment

modern road repair demands LITTLEFORD

84HD Tar and Asphalt Kettles

You get more "hot stuff" faster, at lower cost and with greater safety with the Littleford 84HD tar and asphalt kettles. Made in 3 models—standard, with hand spray attachment, and with motor spray attachment — there's a type for your requirements. For complete information on the most efficient kettle you can buy, send for Littleford bulletin X-1.

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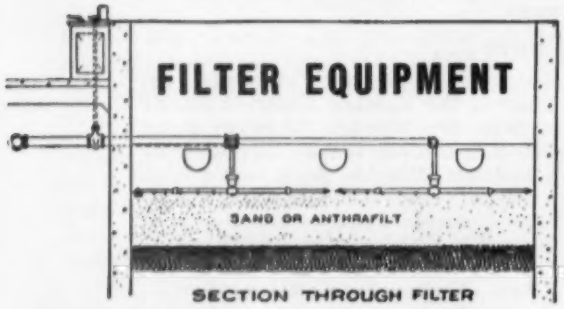
LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinking of the beds

Produces "new" sand after short period of normal operation

Enables you to increase filter runs up to 50%

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Doubles the length of filter runs attainable with sand and quartz media

Requires one-half as much wash water

Filters are out of service less because of the shorter wash cycle

Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

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P. O. BOX 1655, ERIE, PA.

THE NEW FLORLINE UPRIGHT MARKING MACHINE

ACTUALLY

2 FINE MACHINES IN ONE!

$117.50
F.O.B. Detroit

Has Operating Advantages of Heavier 4-Wheel Power Machines Plus Lightness of Weight, Greater Maneuverability and Low Cost of 2-Wheel Machines.

CHECK THESE NEW BONUS BENEFITS

- Adjusts to operator's ideal height. • Carries the full weight-load.
- Upright when you run it. • Upright when you park it.
- Makes straight lines faster with much less effort.
- Stays "on track" with minimum operator direction.
- Makes straight, curved and skip lines with equal ease.
- Portable—easy to transport and clean.
- Converts to 2-wheel machine for narrow, crowded areas in a minute.

H. C. SWEET COMPANY
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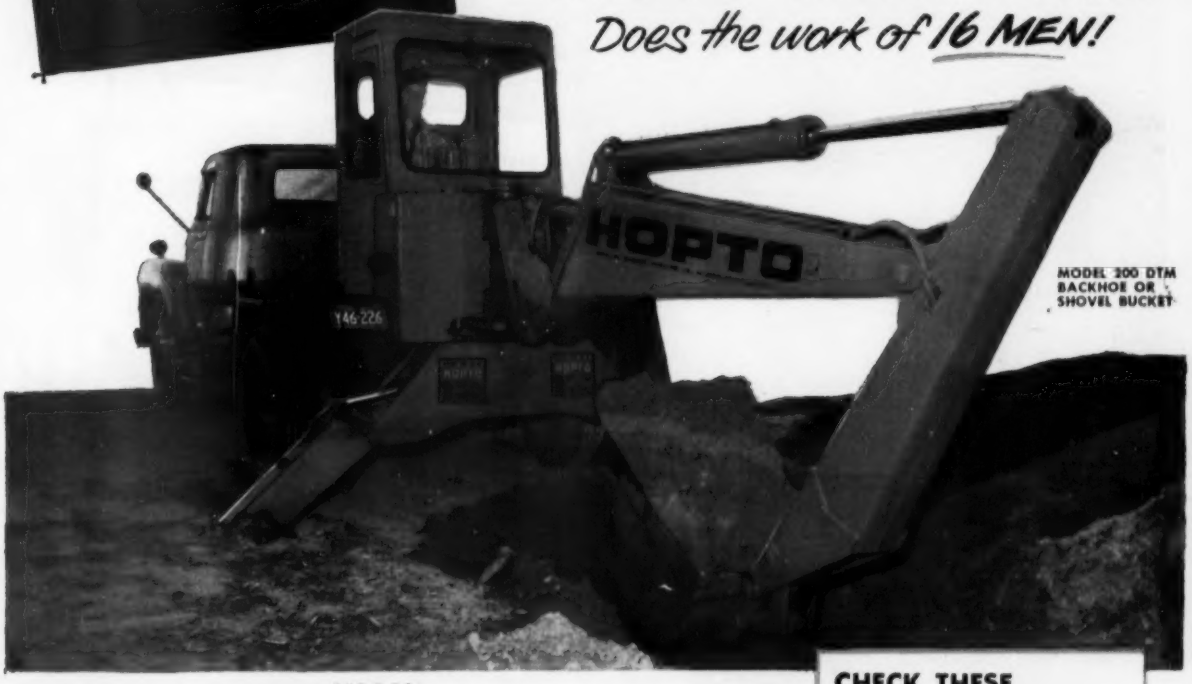
• HYDRAULIC
• MOBILE
• LOW-COST

HOPTO

DIGGER • SHOVEL • CRANE

Does the work of 16 MEN!



MODEL 200 DTM BACKHOE OR SHOVEL BUCKET

digs DEEP... *lifts* HIGH... *easy to operate!*

Here's the fast-cycling HOPTO unit that equips you to profitably handle more jobs at lower equipment investment! The completely hydraulic HOPTO mounts on any 1½ ton or larger truck . . . one that may have been 'written off' but can still serve as a mobile base for this work-hungry, big-capacity unit!

Four simple and easily mastered control levers give finger-tip operation that is fatigue-free. That means more work done *more safely!* Retractable hydraulically operated outriggers quickly level unit . . . provide a solid, *safe* base from which to operate.

CHECK THESE HOPTO FEATURES

- Dipper stick extension tilts digging unit 135°; permits straight side, vertical digging. Eliminates hand work.
- Digs 11½' below surface.
- Lifts 13½' high with shovel bucket; more than 9' with backhoe.
- Alloyed steel hardened pins and self-aligning bearings at all pivot points.
- Variety of widths and types of backhoes and shovel buckets.
- Backhoes and shovel buckets have H & L teeth.

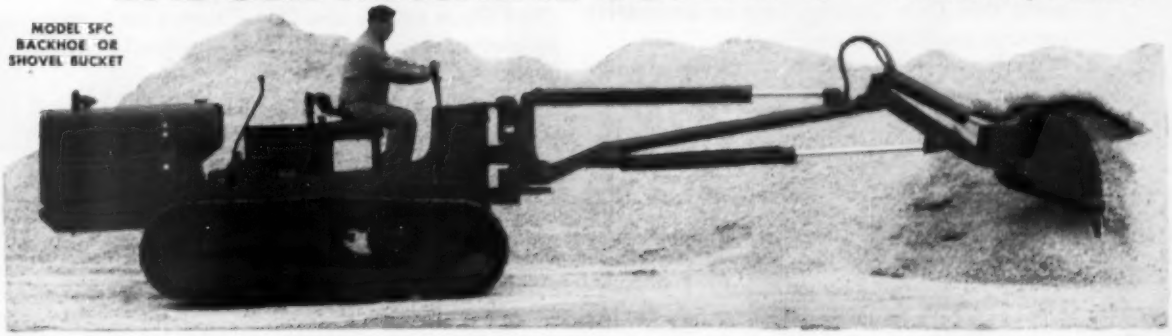
OTHER MODELS

From the large track-type continuous Badger Trencher down to the trailer-type HOPTO, Badger manufactures a complete quality line of digging equipment. HOPTO is also available as a power take-off operated or self-powered trailer model, as a unit for rear mounting on track-type or wheel-type tractors, as a complete self-powered wheel unit, the crawler unit shown below, the truck mounted unit illustrated above and a slightly smaller unit for truck mounting. HOPTO builds a *quality* unit to meet *your* needs, *exceed your expectations.*

WRITE FOR FREE FOLDER!

BADGER MACHINE CO. DEPT. D. WINONA, MINN.

MODEL SPC BACKHOE OR SHOVEL BUCKET



Still MORE PROOF of the LOW Maintenance Costs with DORR CLARIFIERS

Cranston, R. I. Repair Parts Costs Data

No. of Units	Size & Type of Clarifiers	Years of Operation	Total	Repair Parts Cost Per Unit	Repair Parts Cost Per Unit Per Year	Repairs as % of Original Cost	Repairs as % of Original Cost Per Year
2 2 3	50 ft. Type SUZ 60 ft. Type SUZ 26 ft. Type AG Sludge Thickeners	12	$390.30*	$55.76	$4.65	1.55%	0.129%

*The $390.30 includes $181.00 or 46% of the total repair parts cost for spare parts which are still in stock and have not been used for replacement.

Figures tell the story . . . and the actual operating records in Cranston, R. I. are additional testimony that Dorr Clarifiers operate dependably and cost less to maintain.

Maintenance costs are one of the primary factors upon which Clarifier excellence should be judged. Are you getting the best?

We'd like to tell you how Dorr Clarifiers stack up on performance too. Ask a Dorr Engineer for the facts.

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INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

We've gone all out to give you the finest of manuals in the new

DUAL MANUAL

COMPARE THESE UNMATCHED FEATURES!

EXTREME SIMPLICITY—only three moving components . . .

LOWEST MAINTENANCE EVER—all but eliminating wear, repair or need for adjustment . . .

FOOL-PROOF COIN ENTRY—practically impossible for foreign matter to damage working parts . . .

POSITIVE, FLEXIBLE OPERATION—Seth Thomas movement, with time and coin convertibility to meet every need . . .

WEATHER-PROOF CONSTRUCTION—unaffected by the most extreme weather conditions.

This gives you only a partial idea of the advanced engineering applied to Dual Manuals . . . to offer you a *quality* meter and a new high in trouble-free meter life . . . for unmatched performance and top earnings!

For complete information on Dual Manuals, write today to *The Dual Parking Meter Company* (Subsidiary of The Union Metal Manufacturing Co.), *Canton 2, Ohio.*

DUAL PARKING METERS

for extra value always!

Brand new for 1955...

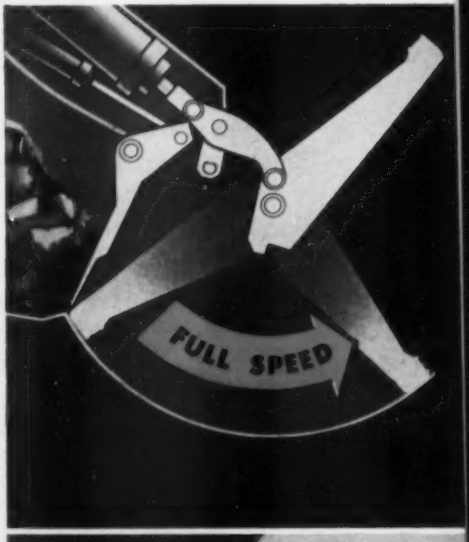
22 Important Improvements

have been made in the LOAD-PACKER*

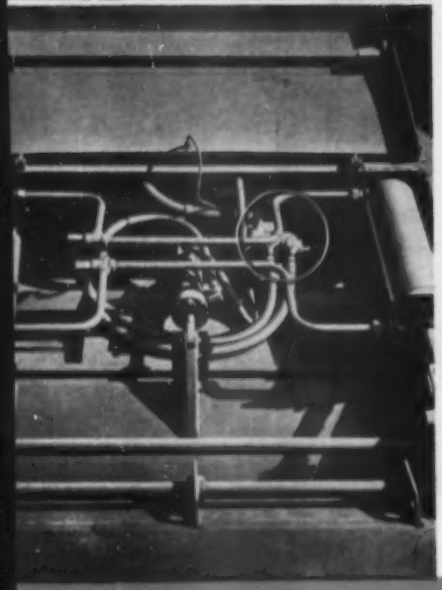
Gar Wood, long the leader in fully-enclosed, sanitary refuse collection units, now offers an even greater Load-Packer. It is the result of two years of engineering, field study, and testing, plus many years' experience with thousands of similar units already in service. To all the time-tested features which made Load-Packer so successful, have been added 22 major changes which make this unit an even better buy. All these improvements are now standard on current production models at *no extra cost* to you.

Here are the highlights!

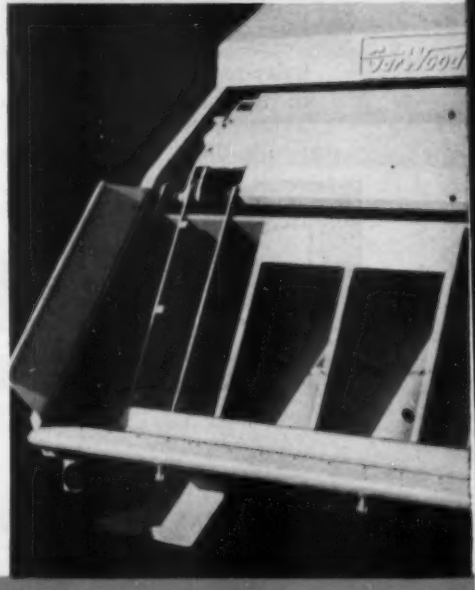
Instant Automatic Biggest news is the new "Safte-Matic" control which makes Load-Packer operation fully automatic. Just one effortless flip of new release lever starts the automatic cycle. Ram-door compacts refuse into body...then re-opens for next load. Crew spends less time operating machine, more time collecting refuse.



Faster Hopper Opening Ram-door opens faster at *full engine power*. This plus automatic compaction cycle adds up to more refuse collected per day. Low-level loading, at truck frame height, means less physical effort to lift and dump heavy containers. Extra wide hopper permits crew to load from both sides without interference.



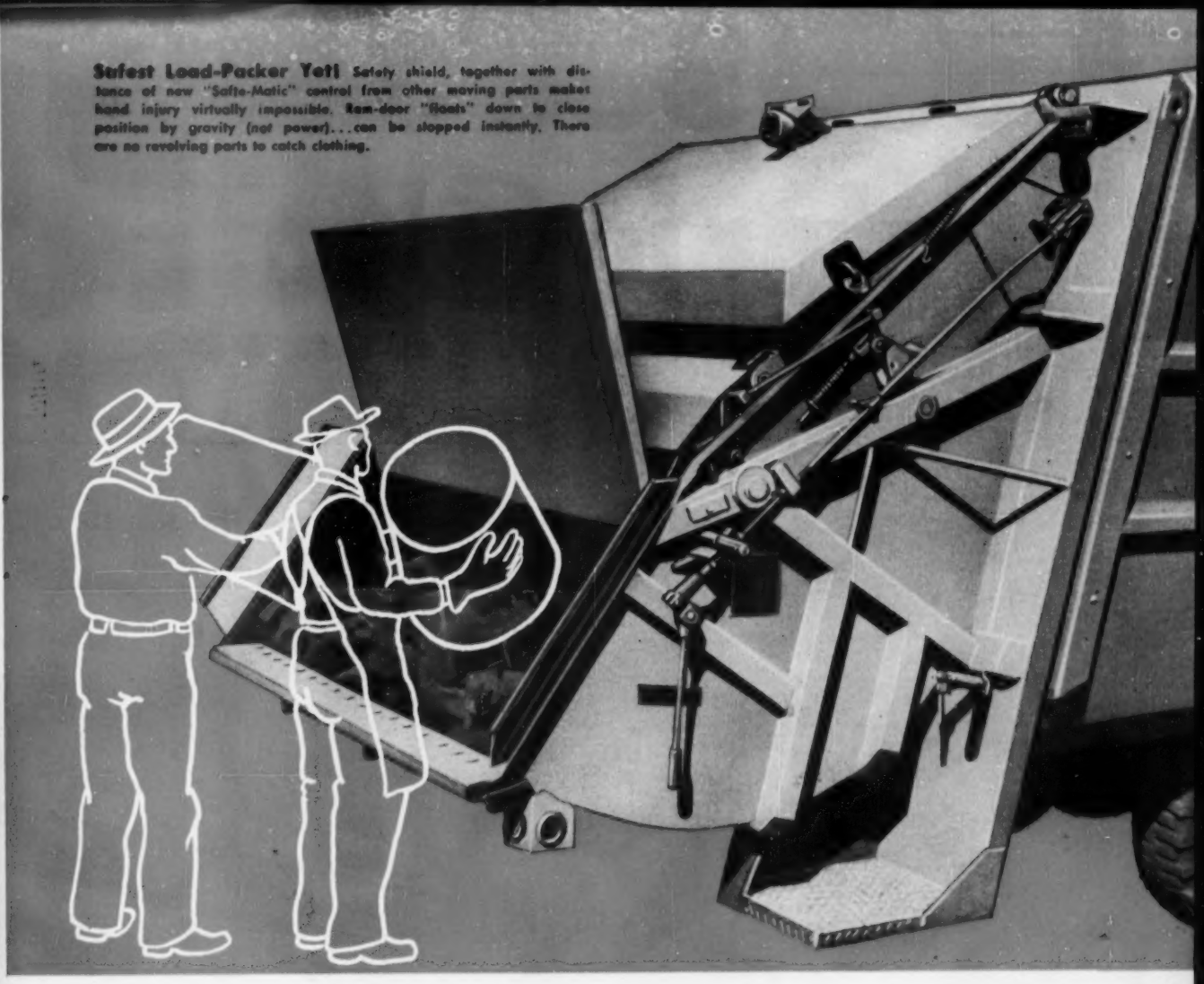
Simplified Hydraulic System One valve instead of two now operates both ram-door and retainer panel. Less hose, less tubing, much simpler adjustment. High-pressure return hose is wire-wrapped for longer service. Operating costs are reduced, servicing takes less time and is easier.



Strongest Load-Packer of All

Entire Load-Packer structure has been reinforced. Extra ribbing makes ram-door a welded box structure, reduces chance of distortion. New ram through-shaft supported at center and at both sides eliminates high socket stresses. Tailgate hinges are stronger. Heavy gusset brackets welded to side panels of ram-door give better hinge support. Retainer panel brackets are heavier. Upper cross channel, supporting both the tailgate hinges and ram jacks, has been strengthened by a heavy Z-section channel. Side panels are welded to the Z-section with heavy gussets. Extra hopper side braces give strong support, better control lever attachments.

*Load-Packer is the registered trademark of Gar Wood Industries, Inc.



Safest Load-Packer Yet! Safety shield, together with distance of new "Safte-Matic" control from other moving parts makes hand injury virtually impossible. Ram-door "floats" down to close position by gravity (*not* power)...can be stopped instantly. There are no revolving parts to catch clothing.

In addition to the many improvements in structure and controls, you get all these job-proved basic features which have made Gar Wood Load-Packer the leader in the field:

Tremendous compaction that adds up to 200% extra capacity per cubic content of body

Fully enclosed, odor and leak-proof

Low-level loading that reduces crew fatigue

Wide hopper that speeds loading, eliminates spillage

Short wheelbase for close maneuvering and sharp turns in narrow streets and alleys

Large, safe riding steps to eliminate walking, speed up collections

Clean, smooth lines to prevent branches from catching in Load-Packer body

Tapered body for fast, clean dumping

Lower maintenance and longer life

A size to fit your need . . . 10, 13, 16, 20, and 24 cu. yd. capacities

You can depend on the new Gar Wood Load-Packers. Earlier models serve almost 40,000,000 people in more than 2600 communities. There are 4 times as many Load-Packers in use *as all other makes combined.*

GW-LP-8

For details, call your Gar Wood distributor or branch or write:

GAR WOOD INDUSTRIES, Inc.

Wayne, Michigan • Richmond, California

GAR WOOD GW INDUSTRIES

*Load-Packer is the registered trademark of Gar Wood Industries, Inc.

Wayne, Michigan • Richmond, California

INDUSTRIES

Badger meters conserve it better!

IN only one year, more than *26-million tons of paper* are required to fill the needs of the nation . . . to help business operate, to serve personal needs, to bring your daily newspaper to your door. Yet it takes *more water than wood* to produce this paper.

The Badger water meters used in America help save water for this vital need . . . measure water accurately for homes and industry . . . provide a precise check of water usage and waste. And they make certain that users pay fairly for the water consumed . . . help make water departments self-supporting.

As a result of their superior performance through the years, Badger meters are the favorites of waterworks men throughout the nation . . . famous as the meters that save water, work and money.

Badger Water Meters

Badger Meter Mfg. Co.
Milwaukee 45, Wisconsin

"Measuring the water of the world for 50 years"

what have

The Pacific Salmon
will travel many miles and
overcome many obstacles to reach
the upper stretches of rivers
where instinct tells it to lay its eggs.
After spawning the fish dies.

This cast iron water main is entering
its second century of economical service
to the citizens of Sacramento, California.

MODERNIZED cast iron

they in common...

THE SALMON AND CAST IRON PIPE...DEPENDABILITY!

Spawning salmon can be counted on to return to the rivers where they were born. CAST IRON PIPE can be depended upon, too... to give years of trouble-free service, often for centuries.

AND HERE'S THE PROOF: Listed below are some of the many water utilities still using cast iron pipe that was installed a century or more ago.

DEPARTMENT OF WATER AND WATER SUPPLY, City of Albany, New York
ALEXANDRIA WATER COMPANY
Alexandria, Virginia
BUREAU OF WATER, DEPT. OF PUBLIC WORKS, Baltimore, Maryland
PUBLIC WORKS DEPT., WATER DIVISION
Boston, Massachusetts
DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATER, Buffalo, N. Y.
WATER WORKS DEPARTMENT
Chicago
COLUMBIA WATER COMPANY
Columbia, Pennsylvania
BOARD OF WATER COMMISSIONERS
Detroit, Michigan
CITY OF FREDERICK WATER DEPT.
Frederick, Maryland
PUBLIC SERVICE COMMISSION
City of Halifax, N.S., Public Water Supply
WATER BUREAU OF THE METROPOLITAN DISTRICT, Hartford, Connecticut
MUNICIPAL WATER WORKS
Huntsville, Alabama
BUREAU OF WATER
Lancaster, Pennsylvania
CITY OF LYNCHBURG WATER DEPARTMENT, Lynchburg, Virginia
MOBILE WATER WORKS COMPANY
Mobile, Alabama
QUEBEC HYDRO-ELECTRIC COMMISSION
Montreal, Quebec
PUBLIC WORKS DEPT., WATER-WORKS & SEWERAGE DIV., Montreal, Quebec
PENNICHUCK WATER WORKS
Nashua, N. H.
WATERWORKS DEPARTMENT
City of Nashville, Tennessee
DEPT. OF WATER, GAS & ELECTRICITY
New York, New York
DEPT. OF PUBLIC WORKS, BUREAU OF WATER, Philadelphia, Pennsylvania
BUREAU OF WATER, DEPT. OF PUBLIC WORKS, Pittsburgh, Pennsylvania
POTTSVILLE WATER COMPANY
Pottsville, Pennsylvania
BUREAU OF WATER
Reading, Pennsylvania
DEPT. OF PUBLIC UTILITIES (WATER)
Richmond, Virginia
DIVISION OF WATER & SEWERS
Sacramento, California
WATER & SEWERAGE DEPARTMENT
City of Saint John, N.B.
DEPT. OF PUBLIC UTILITIES, WATER DIVISION, St. Louis, Missouri
WATER DIVISION, DEPT. OF ENGINEERING, Syracuse, New York
DEPT. OF PUBLIC WORKS
Troy, New York
CITY OF UTICA, BOARD OF WATER SUPPLY, Utica, New York
CITY OF WHEELING WATER DEPT.
Wheeling, West Virginia
WILMINGTON WATER DEPT.
Wilmington, Delaware
WATER DEPARTMENT
City of Winchester, Virginia
WATER DEPARTMENT
City of Winston-Salem, North Carolina
YORK WATER COMPANY
York, Pennsylvania
WATER DEPARTMENT
City of Zanesville, Ohio

TODAY... modernized cast iron pipe, centrifugally cast, is even tougher, stronger, more uniform. *Where needed and specified*, it is centrifugally lined with cement mortar to assure sustained carrying capacity throughout its long years of service.

Cast iron pipe's record of performance... measured in centuries... make it the world's most dependable carrier of water.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director.
122 So. Michigan Avenue, Chicago 3, Ill.

CAST IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association

pipe FOR MODERN WATER WORKS

Nordberg Diesel Completes Almost 4 Years of Round-the-Clock Operation at Hudson, Mass.—On the line 91% of this time

City Now Orders Larger Nordberg Engine Rated 5100 bhp.

HUDSON, MASS. Since going on the line at this modern, efficient municipal light and power plant almost four years ago, a 4250 bhp. Nordberg Diesel engine has been operating 91 per cent of the time, working a "round-the-clock" schedule 7 days a week. Throughout this period the "work-horse" engine has never had a forced shutdown due to engine failure, is the most efficient unit in the entire 7-engine plant and is guaranteeing a source of continuous, dependa[ble] power at low cost for the surro[unding] communit[y]

The a[dditi]on of the 3300 kv berg h[as] Con[sol] op[erat]

her oblig[ations]
Repr[esen]t
missior
commi
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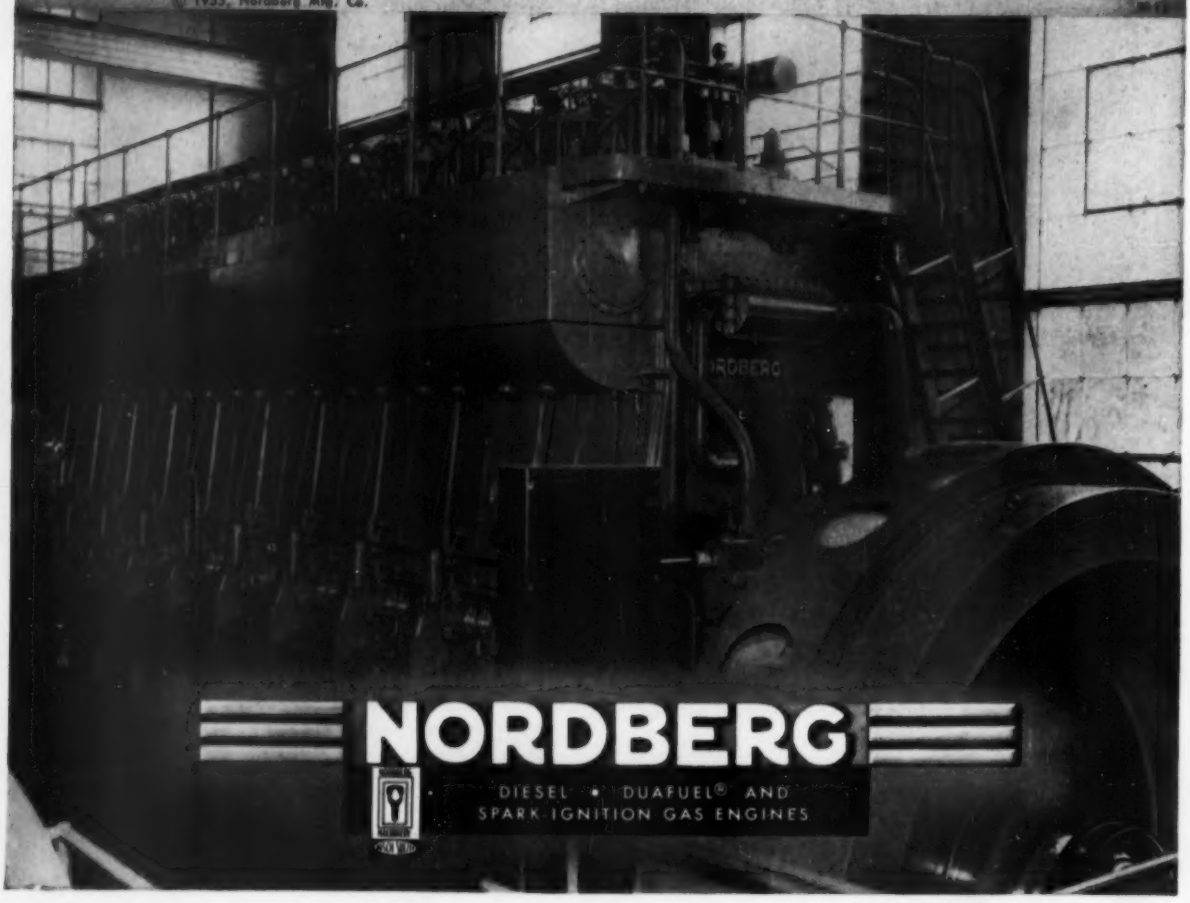
• From the day this big 10-cylinder 4250 bhp. Nordberg 2-cycle Diesel went on the line, it has been the Hudson plant's base load unit, generating an average of 75 per cent of the plant's total production. *It is almost never idle, operating around the clock, Sundays and holidays included, and is shut down only a few times a year for inspection and preventive maintenance.*

With this outstanding record of reliability, plus extremely low operating and maintenance cost, it naturally followed that when this plant needed additional capacity, they again chose Nordberg. A second large Nordberg Diesel will be installed in the Hudson, Mass. plant in the summer of 1955. This 2-cycle unit, rated 5100 bhp., will operate at 240 rpm., 75 BMEP.

Here again is further proof of the kind of dependable performance that users have learned to expect from Nordberg Engines . . . in sizes from 10 to over 10,000 hp.

NORDBERG MFG. CO., Milwaukee, Wis.

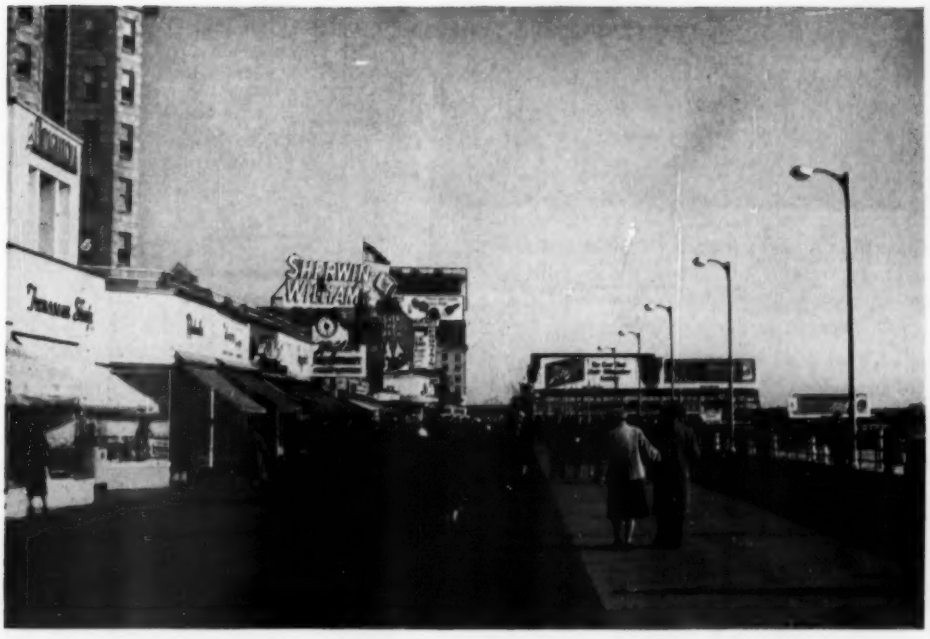
© 1955, Nordberg Mfg. Co.



New Attraction
on Atlantic City's Boardwalk

HY-LITE Lighting Standards

▲ BEFORE



◀ AFTER

Now referred to as the "Great Light Way", Atlantic City's Boardwalk boasts 123 Spun-Crete Hy-Lites which recently replaced old style poles. Hy-Lite Standards, and fluorescent-mercury units mounted on concrete brackets, combine to offer the latest advancement in modern street lighting.

ATTRACTIVE Hy-Lite Lighting Standards are a new and bright attraction assured of a long "run" on Atlantic City's famous Boardwalk.

These Hy-Lites successfully combine *prestressing* with the Spun-Crete process to provide—prolonged freedom from internal corrosion, minimum contraction or expansion under extreme temperature changes, and a durable water-polished granite standard completely immune to salt water corrosion.

Available in various designs, Hy-Lites meet *any* street lighting need and contribute to attractive street appearance while requiring virtually no maintenance. Write today to the American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois, for information regarding the latest *prestressed* Spun-Crete designs.

American Concrete

PRESTRESSED CONCRETE LIGHTING STANDARDS

FOR
• PUBLIC HEALTH
• INDUSTRIAL EXPANSION
WACO, TEXAS
specifies
CLAY PIPE

More than 32 miles of Clay Pipe in sizes from 6 to 24 inches are being installed in Waco, Texas, as part of that city's $5 million bond-financed sewer improvement program. Clay Pipe is helping to solve two of the city's most urgent problems:

PUBLIC HEALTH When the city was alarmed by a polio outbreak in the neighborhood of an orphanage, investigation showed that breaks in an old non-clay sewer pipe allowed sewage to flow into a creek bordering the institution. Medical authorities suspected a connection between the polio epidemic and the sewage overflow. Clay Pipe was installed as a public health measure.

INDUSTRIAL EXPANSION. In two huge new industrial areas opened by the Waco Industrial Development Association, Clay Pipe was used exclusively to handle the chemicals, dyes, acids, and other corrosives commonly found in industrial sewage.

In other sections of the city, acid soils made Vitrified Clay Pipe a "must." There's no safe substitute for Clay Pipe. *It's guaranteed for 50 years.*

City officials directing the project include Mayor H. F. Connally, Jr., City Manager Jack Jeffrey, and City Engineer Eugene Shields. Private Contractors: J. D. George & Co., Rogers Smith Construction Co., and Parks and Andrews.

Vitrified
CLAY
CLAY DIDN'T NEVER WEARS OUT!
PIPE

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1520 18th St. N.W., Washington 6, D. C.
206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 3, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

C-455-1

New Ford Tractor lowers costs,

speeds roadside maintenance!

More and more economy-minded governmental units are using Ford Tractor power for roadside and street maintenance. They like the wide variety of jobs it can handle, and the number of days in the year it can be used. Here's how you can use it, too:

Speed roadside mowing with a Ford Tractor and Rotary Cutter (shown below). Works up to 300% faster than conventional mowers. Costs less to operate and maintain—no sickle bars to buy, no belts to replace.

Cut guard-rail costs with a Ford Tractor equipped with Driver and Breaker. Drives posts in minutes. No holes to dig, no compacting to do! Breaks concrete and rock, tamps dirt, too. One-man operated.

Maintain roads for less with a Ford Tractor and Adjustable Rear Blade. Use it to shape crowns, level berms, mix aggregate, grade and ditch. Six-foot blade is fully adjustable, hydraulically controlled.

Clear snow fast with a Ford Tractor equipped with an Industrial Loader and Blade Snow Plow. Attach a bucket to load snow, handle salt and chemicals. Compact and highly maneuverable for work on busy streets.

To see how a Ford Tractor can stretch roadside maintenance dollars all year long on many other jobs like these, call your nearby Ford Tractor and Equipment Dealer. He's at your service! Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

No Bottleneck Here

Here's the way to handle those tricky intersections... where a full stop is not always necessary... but caution must be heeded. MIRO-FLEX YIELD SIGNS, recommended by the U. S. Public Roads Administration, handle the situation and still keep traffic flowing. Like all MIRO-FLEX signs, they are *embossed* for greater strength and readability. Finished with the best baked-on enamel on zinc-coated Bonderized steel, they assure you a lifetime of maintenance-free service. *Write for more information on* YIELD signs and the complete line of MIRO-FLEX traffic control signs.

WRITE TO

THE MIRO-FLEX CO., INC.

1824 EAST SECOND STREET WICHITA, KANSAS

NEW!

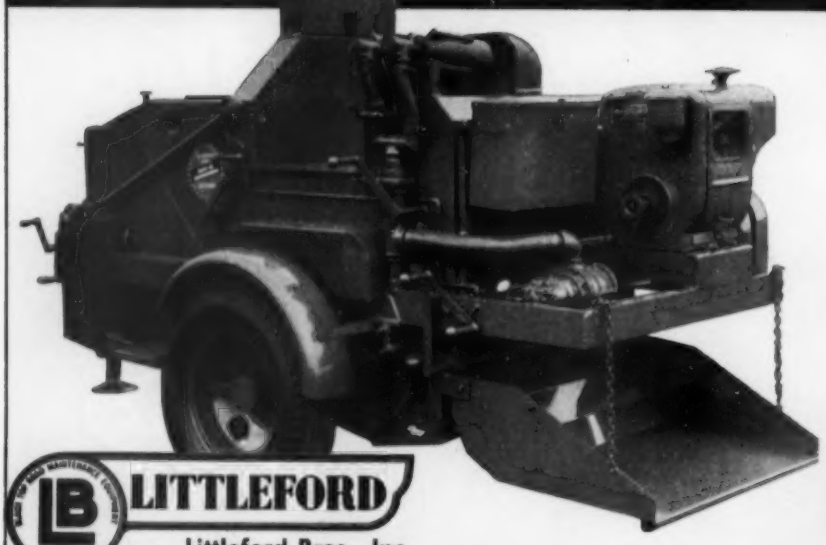
7 ton hot
12 ton cold capacity

for hot and cold bituminous mixes

LITTLEFORD Model 700

"TRAIL-O-PATCHER"

Bituminous Mixer



The new Littleford "Trail-O-Patcher" —the first self-contained, all-weather bituminous mixer — gives highway departments and contractors a real break. The 200-gallon asphalt tank holds enough to last all day. And this ingenious new mixer has its own bitumen metering system and its own aggregate drying compartment.

Designed, engineered and built with Littleford quality through and through, the new "Trail-O-Patcher" is your most practical answer to the rising cost of road maintenance. It will pay you to send today for descriptive bulletin EE-28.

LB LITTLEFORD

Littleford Bros., Inc.

500 E. Pearl St., Cincinnati 2, Ohio

Roll-On Joint Pipe For Permanence!

The ROLL-ON JOINT pioneered by the American Cast Iron Pipe Company and accepted as a standardized joint of the cast iron pressure pipe industry, is now available in both large and small diameter pipe. Roll-On joint pipe was introduced sixteen years ago.

Roll-On joint pipe is cast centrifugally by the Mono-Cast process in sizes 2″ through 48″. Standard joint materials, including rubber ring, jute and bituminous joint compound are furnished with the pipe. Roll-On joint pipe is easily and quickly assembled by unskilled labor.

This type of pipe is offered as an alternate for standard Bell and Spigot pipe. Having a positive rubber-packed bottle-tight joint, Roll-On is lower in first cost than other types of joints. It is included in the new Federal Specification WW-P-00421 as Joint Type II.

The above illustration shows 48″ AMERICAN Roll-On Joint pipe being used in the construction of a 7-mile-long water supply line in Texas. Depending upon local conditions, the contractor laid from 500 feet up to 1,000 feet per day. The final tests on the line showed the Roll-On Joints to be bottle-tight.

Users of this type of cast iron pipe are enthusiastic about it.

AMERICAN

1905 - GOLDEN ANNIVERSARY - 1955

AMERICAN CAST IRON PIPE CO. 50 YEARS BIRMINGHAM, ALABAMA

"BRIGHT BY DAY — BRILLIANT BY NIGHT"

GO RIGHT
POLICE DEPT.

WITH

NITE-BRIGHT

"NITE-BRIGHT SIGNS" are made of heavy gauge aluminum faced with Scotchlite and give many years of the finest service. See our listing in the Municipal Index.

We can also supply embossed steel non-reflective baked enamel signs and traffic cones. We maintain a stock of steel channel posts for immediate delivery.

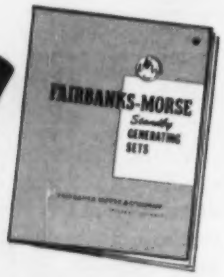
Write for special prices on large orders.

Red Stop sign $101

NITE-BRIGHT SIGN COMPANY
140 JAMES STREET, BRIDGEPORT 4, CONN.

FREE!

8-page booklet of Fairbanks-Morse Generators!



Mail the coupon for booklet showing complete specifications of Fairbanks-Morse power generators for all industrial, commercial, municipal, and construction usages. Fairbanks-Morse generators range in capacities from 600-watt portables to 125-kw. sets—using gasoline, L P and other gases.

FAIRBANKS-MORSE
a name worth remembering when you want the best

WATER SYSTEMS • GENERATING SETS • MOWERS • MAGNETOS
PUMPS • MOTORS • SCALES • DIESEL LOCOMOTIVES AND ENGINES

Fairbanks, Morse & Co., Chicago 5, Ill.
Gentlemen: Please send your 8-page booklet on power generators.
Business name_____
Your name_____
Address_____
City_____ Zone____ State_____

MAKE YOUR LAWN AREAS "THE PRIDE OF THE TOWN"

E.W.T. SELECTIVE WEED-KILLER

Keep your lawn areas, seeded traffic islands and other improved areas the beauty spots they should be—with E.W.T. *Selective* Weed-Killer. Non-injurious to most grasses, but one spraying in economical solution (a cupful to 24 gallons of water) has proven successful for clearing rights-of-way of poison ivy, barberry, honeysuckle, poison sumac, locust, wild cherry and other persistent perennials and shrubs—including many species of common broad-leaved noxious weeds.

AND . . . WHERE NO VEGETATION WHATEVER IS WANTED . . .

DOLGE SS WEED-KILLER

Ideal for your parking areas and driveways, along fences and abutments. KILLS vegetation and windblown seeds on contact, then works down through the soil to the roots, sterilizing the surrounding earth. Here is truly effective, long-lasting protection against unwanted plant growth.

Please write for illustrated, easy-to-understand literature on scientific weed control. Your Dolge Service Man, too, will be glad to answer your questions.

FOR FREE SANITARY SURVEY
of your buildings
see your
DOLGE SERVICE MAN

dependable DOLGE
WESTPORT, CONNECTICUT

RICHFIELD, MINNESOTA, chose "Flexibles" to help protect its New 5 MILLION DOLLAR Sewer System INVESTMENT!

Without a sanitary sewer system two years ago, Richfield is now in the final stages of a five million dollar sewer improvement program to serve its rapidly increasing population, which is now over 32,000. For this, as well as other civic achievements, Richfield was selected as one of eleven "All America Cities" for 1954 by Look Magazine in cooperation with the National Municipal League. To aid in protecting the sewer investment, "Flexibles" were selected. Pictured watching a set of "Flexible" Bucket Machines on the job are Robert Long, Superintendent of Streets and Parks; Leroy Trafton, Village Manager; Fred Kittell, Mayor; Councilmen John H. Rose and John Shields; and Egil Wefald, Director of Public Works.

Flexible SALES CORPORATION

3786 DURANGO AVE., LOS ANGELES 34, CALIF.

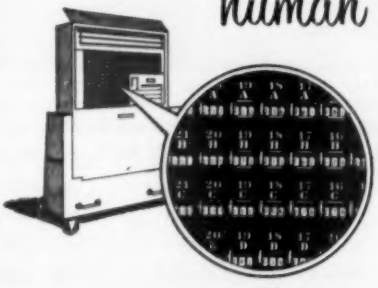
(Distributors in Principal Cities)

Send for FREE CATALOG.

AMERICA'S LARGEST LINE OF PIPE CLEANING TOOLS AND EQUIPMENT

IN FERNDALE, MICHIGAN ELECTION DAY RESULTS ARE QUICK AND ACCURATE

Not subject to human error...

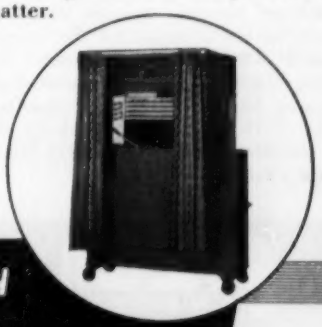


Each candidate's total is accurately and permanently recorded on own individual counter.

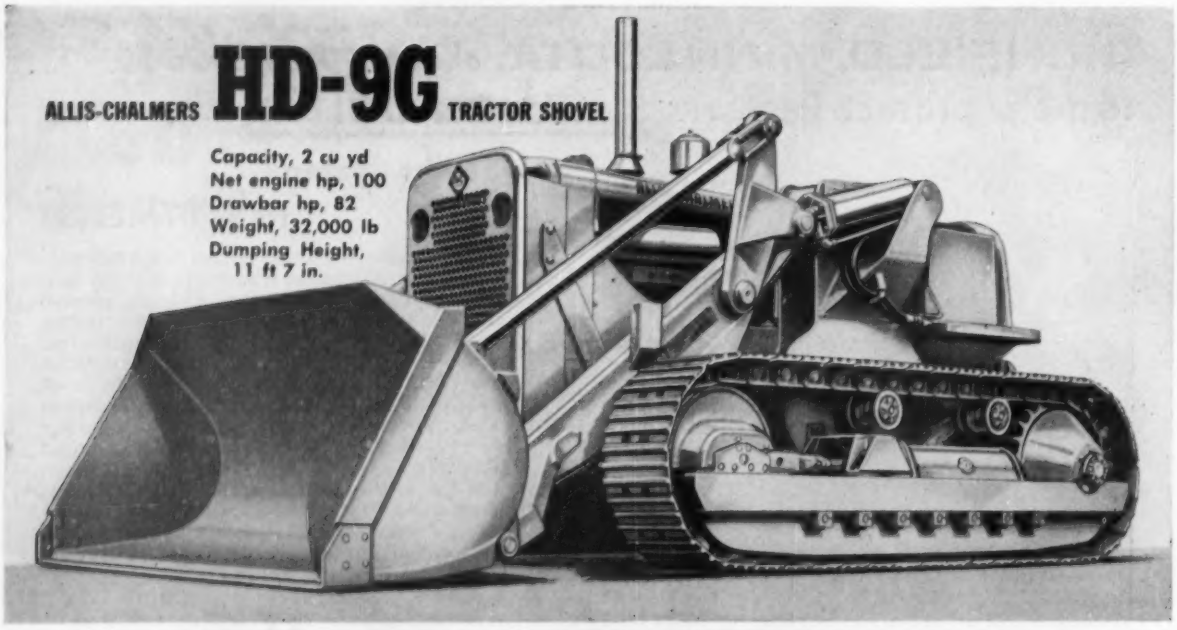
T. H. O'Donoghue, City Clerk, writes:

Our recount in the City of Ferndale was completed in less than one day's time and as anticipated there was no discrepancy or change of any kind in the recount result, as indicated on the 26 voting machines in use in our City.

Recounts are not a desirable or pleasant thing for any City Clerk or Election Commission, but with voting machines they are a very simple matter.



AUTOMATIC VOTING MACHINE CORPORATION
JAMESTOWN, NEW YORK

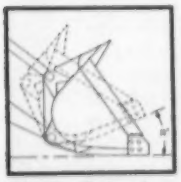


POPULAR 2-YD HD-9G TRACTOR SHOVEL NOW OFFERS

Higher Work Capacity

Design refinements in the Allis-Chalmers HD-9G now make it even more productive than ever. First, the net engine output has been increased to 100 hp, with 23,000 lb of push for extra crowding and digging ability, fast work cycles.

Streamlined bucket design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more pay load where it's wanted. Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.



A new addition to the wide variety of attachments available for the HD-9G Tractor Shovel is the Tip-Back bucket which allows the operator to roll the bucket back approximately 25° at ground level. Ideal for handling greater capacities of loose stockpiled materials, the Tip-Back bucket can be carried lower to the ground for greater stability . . . can load bulky objects easier.

New-type ceramic master clutch lining reduces lever pull, makes it easier for the operator to do more. The new HD-9G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

Lower Operating Cost

Design improvements also add longer life to the HD-9G under all work conditions. Heavy box-section booms are 50 percent stronger, assuring proper alignment even working in the toughest materials. The low design of the new HD-9G combination stabilizer and cowl not only offers easy accessibility for maintenance and service, but contributes to maximum operator vision. New ceramic master clutch lining operates longer between adjustments, increases clutch life.

Hydraulic system provides new maintenance simplicity, safety of operation, as well as improved visibility. With new-style tank, there are few external fittings, greatly reducing possibility of outside leaks. Magnetic filters and suction-line screens protect the entire system from damaging grit. New, improved hydraulic pump is designed for long life as well as fast and accurate bucket action.

Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.

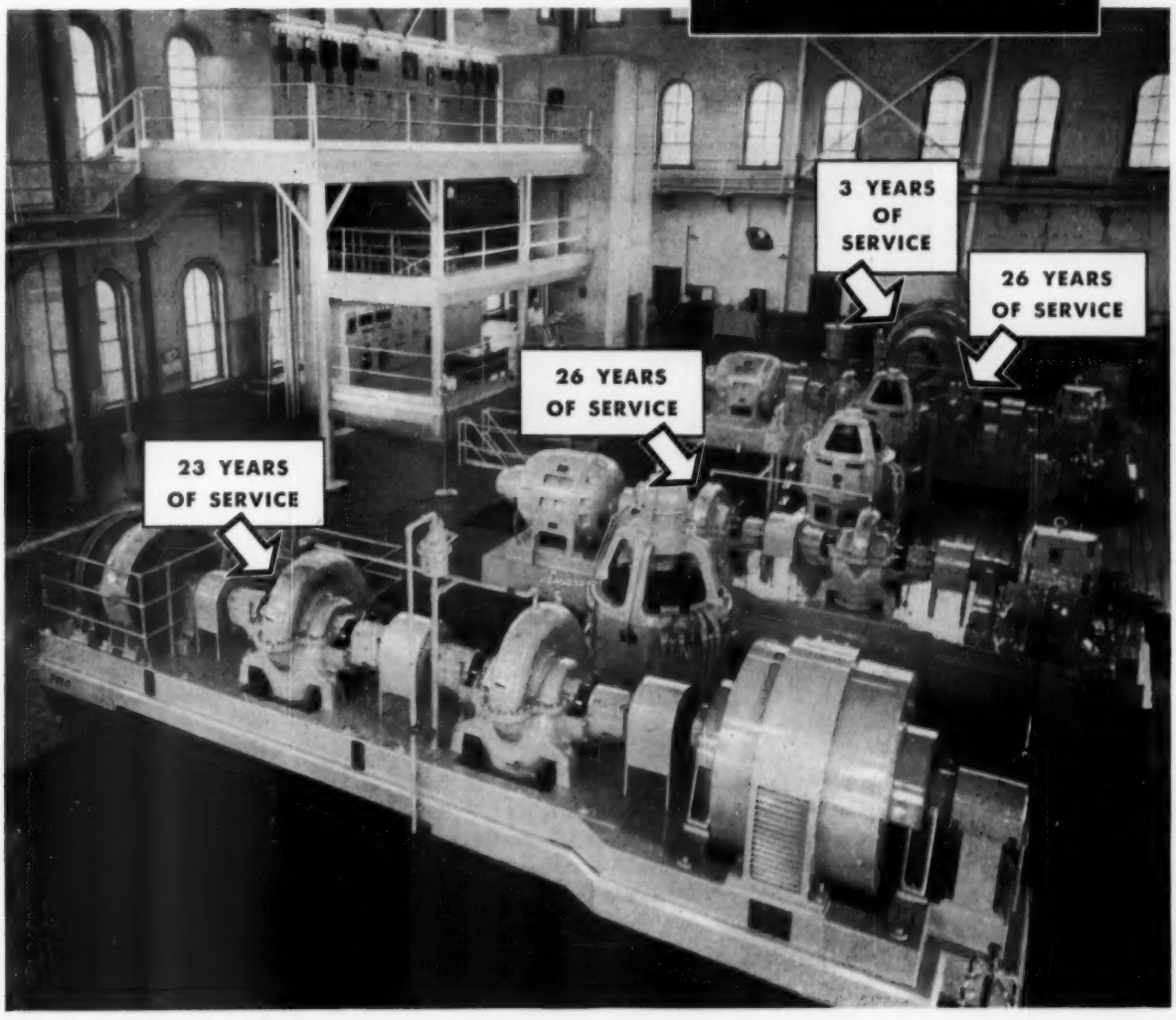
☆ ☆ ☆

See your Allis-Chalmers dealer for further information on what the HD-9G can do for you — or a demonstration right on your job.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Nashville goes to 100 mgd with

DE LAVAL
CENTRIFUGAL PUMPS



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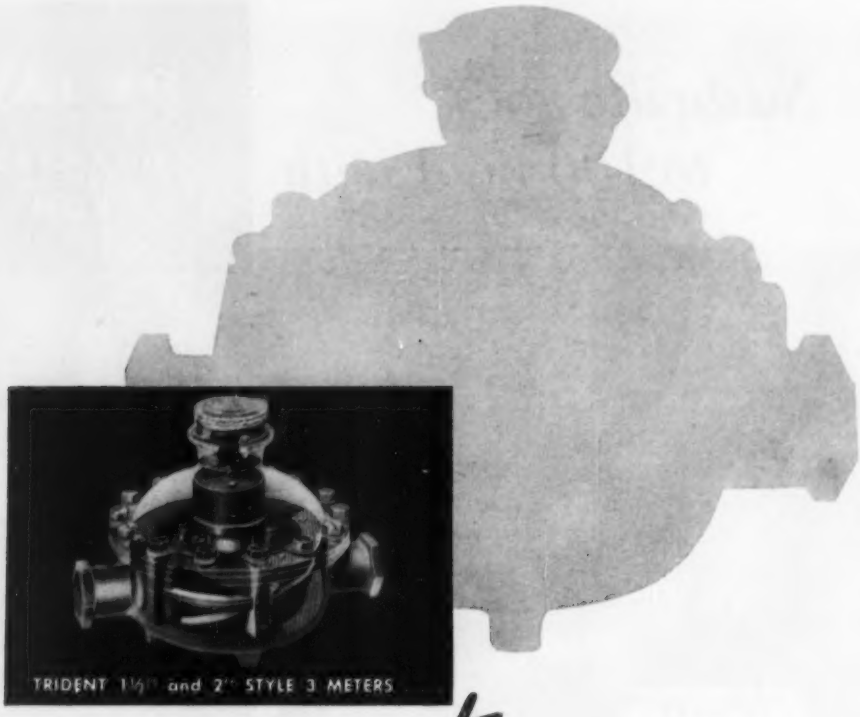

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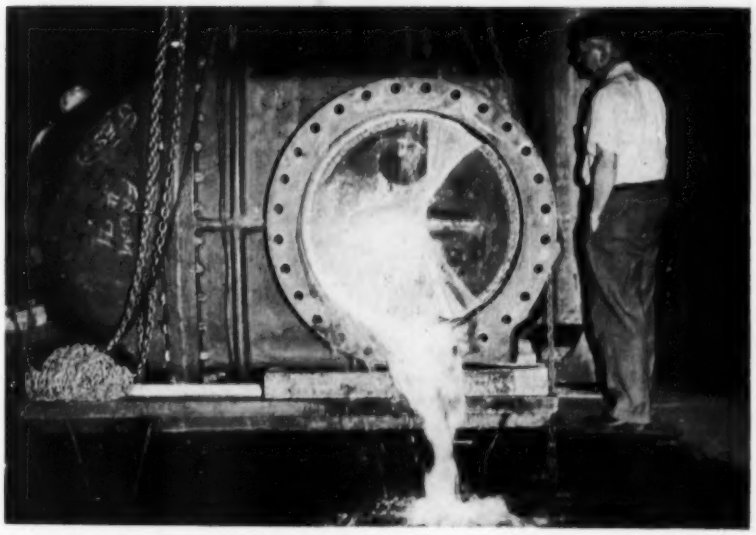
D61

We Are Trying Butterfly Valves In Filters

Rubber-seated butterfly valves offer means of overcoming leakage in backwash lines

By JOHN R. BAYLIS
Engineer of Water Purification
Department of Water and Sewers
Chicago, Ill.



Chicago's water department shows leakage through a 30-inch gate valve in dramatic fashion. At 21 pounds of water pressure, the leakage was 93,000 gallons each day.

THE rubber-seated butterfly valve gives promise of overcoming one of the most troublesome valve problems that has arisen in our filter operation. Current studies indicate that this type of valve will be more economical than the gate valves that we have been using. The butterfly valves have not been in service long enough to tell the whole story of their reliability; however, we are well pleased with their performance so far.

To test the durability of the rubber seat, we installed an automatic opening and closing mechanism on a butterfly valve located on the filter influent line. The automatic device closed and then immediately opened the valve every 20 minutes. This valve passed through over 45,000 opening and closing cycles and showed but little wear. If the valve were to be operated only once a day, it would have an unusually long life. It is the aging of the rubber that may have more influence on the valve's durability than frequent opening and closing.

Backwash valves generally are the first of the filter valves to give trouble, chiefly because they must operate under higher pressures than the others. At the South District filtration plant, the 30-inch backwash valves began to leak after three to five years of service with 2,000 to 3,000 cycles of operation. We would guess that when a valve leaks about 20,000 gallons of water daily, it needs repairing. Based on this figure, we have at least 53 valves that need overhauling.

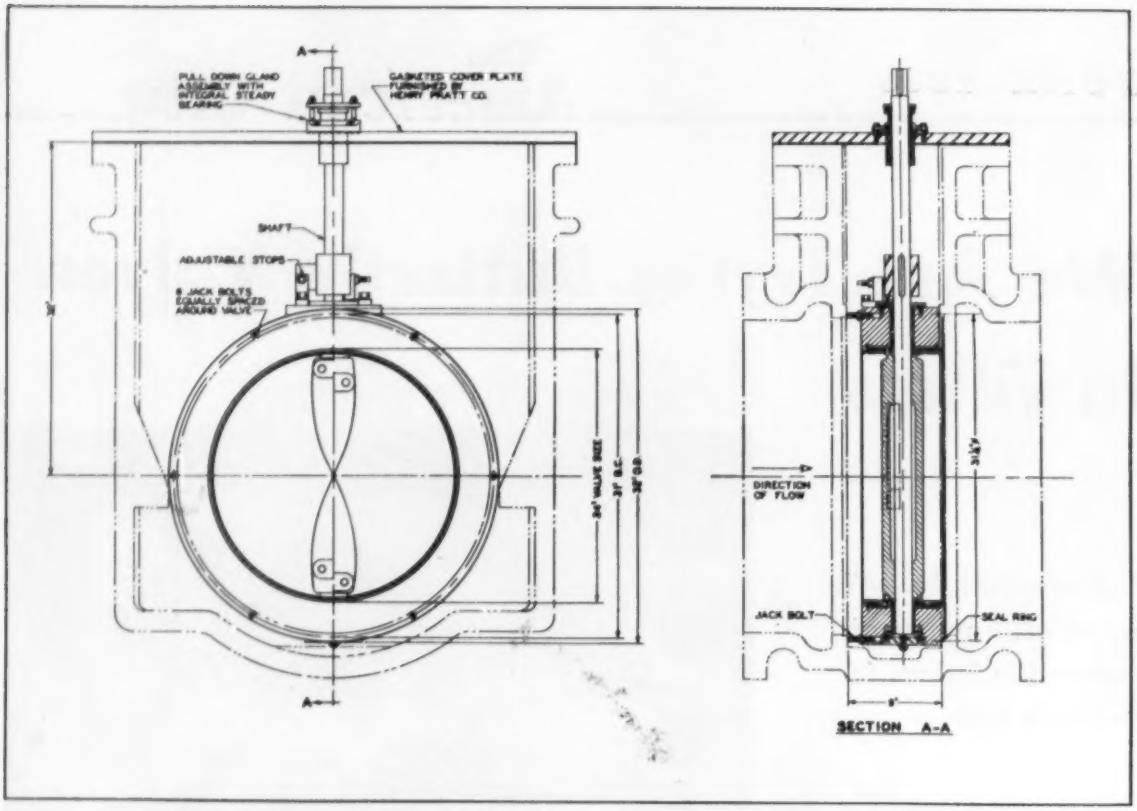
Design Weaknesses

Gate valves are constructed to sturdy lines, yet they have certain inherent weaknesses in their design. They must move against the full force of the flow of water that they must stop. Their basic design is simple and direct, and the manufacturers have built great strength into the valves to permit them to operate against these excessive pressures. With a water pressure of 30 pounds per square inch, the total force on a 30-inch-diameter plane would be more than 10 tons, and this must be supported by the rings and the disc.

Gate Valve Details

To state this problem somewhat more clearly, it would be helpful to review the parts of the gate valve and the way it works. The body of the valve is cast-iron and holds two brass seat rings, which fasten to the body by threaded connections. The rings face each other and, in the 30-inch valve, are 9 inches apart. The face on each ring has to be in a true plane and must be set at a proper distance from the face of the other ring.

The discs that form the gate part



The butterfly valve can be inserted into the gate-valve housing as shown in the drawing.

of the valve fit loosely into the body except when wedged against the face rings when the valve is closed. Special guides hold the discs away from the bronze rings when the valve closes, to prevent damage to the bronze ring faces. These guides are fastened inside the body in recesses provided when the casting is molded. They are bronze strips 1½ inches wide and ½ inch thick, set into position with Babbitt metal. Two tracks for wheels to hold the weight of the discs are babbitted in the body of the valve on the lower side.

The two discs form the main part of the gate assembly. When the water exerts pressure on one side of the disc only, the downstream disc has the task of making a joint watertight. Two cast-iron wedges are provided in each valve between the discs. They are fastened to the yoke and move with the yoke and discs. Just before final closing, the wedges come in contact with sloping lugs on the body of the valve.

When closing the valve from an open position, the stem is pushed inward and moves the two discs and wedges across the 30-inch opening through the body of the valve. The discs must move about half-way across the opening before they reduce the flow to any extent. Near the closing position the pressure on the valve discs becomes greater and greater as the water flow is interrupted. The pressure caused by the water against the discs, in excess of 10 tons, is supported largely by the upper and lower bronze shoes on the discs, which, when in motion, slide on the bronze guides of the body near the top and bottom of the valve body.

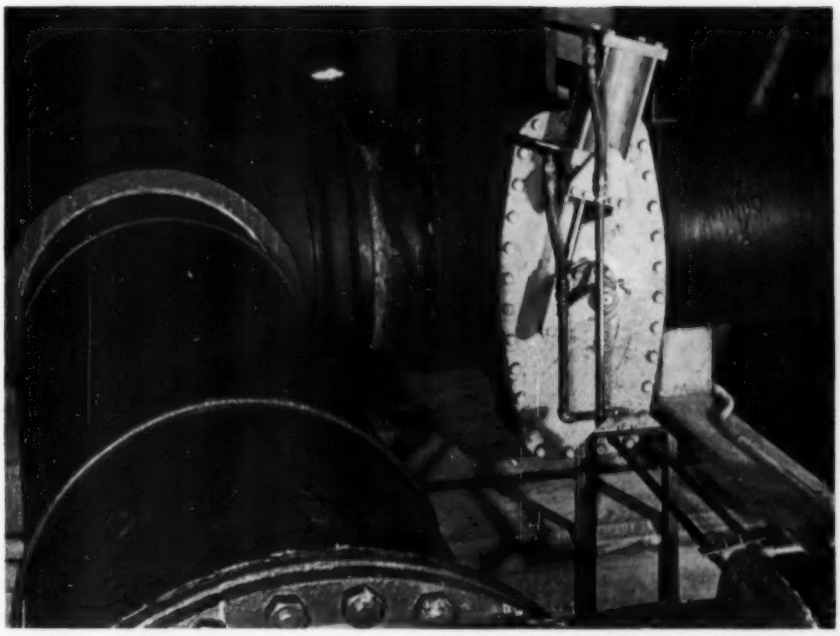
Metal Crushed

This pressure created the trouble. In order for the face of the disc rings to be pressed against the face of the body rings, the shoes on the disc must be clear of the guide rails before the wedge pressure comes into play. The critical condition occurs when the least area of metal is in contact; that is, when the disc shoes begin to clear the guides in order to allow the disc to move slighty downstream, so that its ring contacts the face of the body ring. Very likely, conditions are produced whereby an extremely small area of metal in the guides is in contact with the shoes to take the full thrust of the water pressure just as the discs begin to spread and to transfer the pressure to the bronze rings of the body.

The Cause

Evidence indicates that conditions which will cause crushing of the metal on the guides are more likely to occur in opening the valve than in closing. During the period between backwashings, the faces of the disc rings are pressed against the faces of the body rings at a pressure of about 11 tons.

The lugs that hold the discs to the yoke block have a play of 3/8 inch. About three-fourths of the weight of the upper wedge, submerged in water, still is pressing down and tending to hold the discs against the body rings. When the shoes on the downstream disc strike the guide on the valve body, it presses into the bronze and scrapes off a little of the metal, either on the body guides or the shoes. Should there be variation in the hardness of the two metals, the



Here is an actual installation of a butterfly valve inserted into the backwash line. Note the small hydraulic cylinder that controls the butterfly valve.

softer one will be worn away first.

Each operation of the backwash valve wears away a little more of the metal on the guides and rings, and increases the leakage because the pressure produced by the high head of water exceeds that which the metal is capable of resisting. Eventually, the forward end of the downstream disc begins to gouge into the body ring, causing wear on this part of the valve.

Butterfly Valve Suggested

The cost of taking a 30-inch valve out of the line, sending it to the manufacturer's shop for repair, and returning it to position in the line is substantial. So we decided to try inserting a rubber seat butterfly inside the body of the valve without removing it from the line.

As is well known, butterfly valves revolve on a central pivot. They open and close without having to force their way through the flow of water in the same way that gate valves do. The flow of water balances the pressure on each side, and thus makes it possible to close a line against a full head of pressure much more easily. In the past, they have had the fault of not being thoroughly leakproof. However, manufacturers have improved them with the help of the rubber seats to overcome this difficulty.

One of the manufacturers expressed a willingness to make butterfly valves that could be inserted into the gate-valve body. The valve fabricated has a 24-inch diameter and is held in place by a plate fastened over the body of the valve at the location of the bonnet which has a stuffing box for the butterfly valve stem. The smaller diameter is not troublesome since the line has excess capacity and the smaller insert provides all the water needed.

The insert is made with a rubber-ring gasket that is forced against the body ring on the downstream side in order to make a watertight joint. On the upstream side there is a space of nearly 1 inch in which jack-bolts are used to press the insert firmly against the downstream side.

More Ordered

We now have six such valves in use at the South District filtration plant; and eight additional butterfly valves have been ordered. This should supply enough valves for a thorough trial of this design on backwash lines.

Thus far, there is every indication that the insert valves will prove much less expensive to maintain than the gate valves. One major advantage is that the removal of the valves for repairs is simple. One need only unbolt the flange that replaced the bonnet and move the valve outside for repairs. It is almost impossible to replace the guides in a gate valve in place unless the valve is placed with the stem in a vertical position. Also, there is objection to setting large hydraulic piston valves in such a position.

The Cost

The cost of keeping valve stems watertight is less for butterfly valves than gate valves when the stems move with the gates. The size of the hydraulic cylinder for operating a butterfly valve is smaller than for a gate valve. This saves in the cost of the cylinder and the amount of packing required. A stem not moving in and out requires much less frequent tightening of the packing gland to prevent water leakage.

The gate valves obviously are of great value when placed in portions of the system requiring only infrequent operation. Their great strength and reliability makes them of tremendous usefulness. But when a valve has to be opened and shut frequently, as does the valve on the backwash line, then it would look as though the butterfly type can give a more economical account of itself. The fact that the water-works designer now has a butterfly valve that can be inserted into a gate-valve housing means that we can now make the change at a minimum of cost and inconvenience and put a halt to the waste of water.

Burlington, Vt., protects the recreation features of beautiful Lake Champlain with this new sewage-treatment plant.

First Plant in Vermont

Burlington, Vt., protects Lake Champlain from pollution with a modern sewage-treatment plant

LAKE CHAMPLAIN, one of Burlington's more important assets, has had the help of the city's new modern sewage-treatment plant to keep its waters clean and beautiful for the past two years. The plant was designed by Whitman and Howard, Boston consulting engineers, who originally proposed this improvement in 1946.

Plant Details

This plant is designed to receive an average daily sewage flow of 3.7 mgd (million gallons daily) from a system that combines storm and sanitary sewage. Its maximum pumping capacity is 10.8 mgd. Special interceptors had to be constructed to carry the wastes to the treatment plant. The interceptors use control devices consisting of orifice plates and overflow dams that allow excess storm sewage to bypass the treatment plant.

Raw sewage may be chlorinated for odor control upon its entrance to the plant. The sewage passes first through the 3¾-inch-wide openings of a coarse bar screen and then through a Parshall flume, having an 18-inch throat. The flume is used in conjunction with Builders-Providence metering devices that indicate, totalize, and record the sewage flow, and regulate the chlorination equipment to function in proportion to the flow.

From the Parshall flume, the sewage flows through a Dorr mechanically cleaned bar screen, with ¾-inch openings in a 4-foot channel. A rake automatically cleans the screen whenever head loss through the unit builds up. The operator may either remove the screenings and bury them, or pass them through a Gruendler shredder before returning them to the sewage flow. The shredder has an hourly capacity of 2,500 pounds and a charging capacity of 15 pounds.

After screening, all sewage is pumped to the grit collector and then flows through the rest of the treatment facilities by gravity. The pumping equipment is powered by three vertical G-E motors. Each pump has a capacity of 625 gpm. The three motors have a total of 12 speeds, thus providing an easy transition from the 625-gpm minimum to the 7,500-gpm maximum. An Automatic Control float control governs the transition.

The Detritus Tank

The sewage drops its grit into a 16-foot-diameter Dorr Detritor that features a mechanical washer. In this process, the grit settles in a shallow tank and is swept to a pocket at one side. A mechanical rake then forces the grit up an inclined trough, washing it in the process, and finally deposits it in a receptacle for final removal. It is designed to remove about 95% of the 65-mesh sand at the maximum flow of 9.8 mgd.

From the Detritor, the sewage

flows to two clarifiers. Each measures 55 feet square, has a 7-foot sidewater depth, and is equipped with Dorr mechanical sludge collectors and grease-skimming equipment. Settled sludge is raked to a central hopper from which it is pumped to the digester. Scum and floating matter proceed to a scum pit before being pumped to the digester.

Chlorination

The clarifiers furnish a detention period of two hours at design flow with a weir overflow rate of 615 gallons per square foot per day. The effluent from the clarifiers next flows through the postchlorination manhole for sterilization and then through the plant outfall to Lake Champlain.

As indicated, the operators can chlorinate the sewage either as it enters the plant or as it leaves. The plant has one 400-pound per day Builders-Providence Chlorinizer assigned to this duty, and the plant's design permits a second unit to be provided. It uses primarily chlorine in 1-ton containers. Dosage is set manually and maintained automatically in proportion to the sewage-flow rate.

Raw sludge collected in the primary clarifiers is pumped to the digesters. The sludge pumps have a capacity of 75-gpm each, and are controlled by two time clocks which may be set for any five-minute interval during a 24-hour period.

The digesters consist of two 45-foot-diameter tanks with 24-foot side water depths, and use Dorr equipment. The primary tank is heated with immersion-type hot water coils and is provided with a mixer. The secondary tank is provided with a floating gas holder having a storage capacity of 7,720 cubic feet at 6-inch water pressure. Sludge is fed first to the primary tank which is maintained at a temperature of about 90°F. At set intervals, the primary tank sludge is drawn to the secondary digester for the final digestion stage.

Digested Sludge

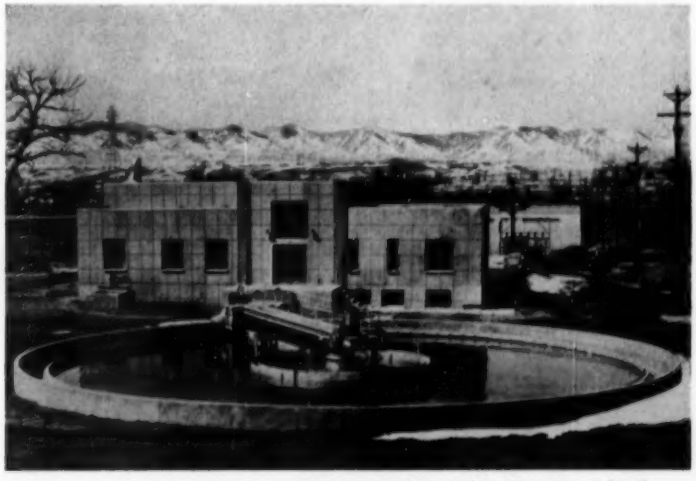
Digested sludge is next drawn to the sludge well in the administration building for storage prior to its dewatering on the vacuum filter. A bucket elevator with variable speed control raises the sludge to the conditioning tank into which lime slurry and ferric chloride solution are added. The conditioned sludge is fed by gravity to a Komline-Sanderson coil-spring type vacuum filter. This is 8 feet in diameter and 10 feet long. Its filter area is 250 square feet. The filter cake is discharged first onto a horizontal and then to an inclined belt conveyor which discharges the cake to a waiting truck.

Gas Heats Building

Digester gas heats the digestion tank and the administration building. A separate fuel-oil supply augments gas supply during unusually cold weather. The administration building provides for office space, a laboratory, pumping room, vacuum filter room, chlorinator rooms, and a general control room.

The cost of the project, including interceptors, was $741,000. The system is supervised by the Board of Street Commissioners; B. F. Garrity, chairman. The plant is operated by John T. Vincent, superintendent.

Double-Duty Water Treatment



In the spring and summer—turbidity, in the fall and winter—hardness have to be removed from Englewood's water. This versatile plant does both.

THE people of Englewood, Colo., by locating their water-treatment plant against a backdrop of the white-capped Rockies have provided it with one of the most beautiful settings that any plant in the country enjoys. At the same time, the city assigned to the plant a double-duty type of water treatment that keeps it so busy that it can't enjoy the scenery.

Englewood, a suburb of Denver, gets its water from the South Platte River, which is fed principally by snow stored in the mountains. In the spring and summer, this water is soft and muddy so that the plant's primary job is to remove the turbidity. However, in the fall and winter, mineral-laden ground water feeds the river so that the plant must quickly switch to softening procedures to remove these minerals.

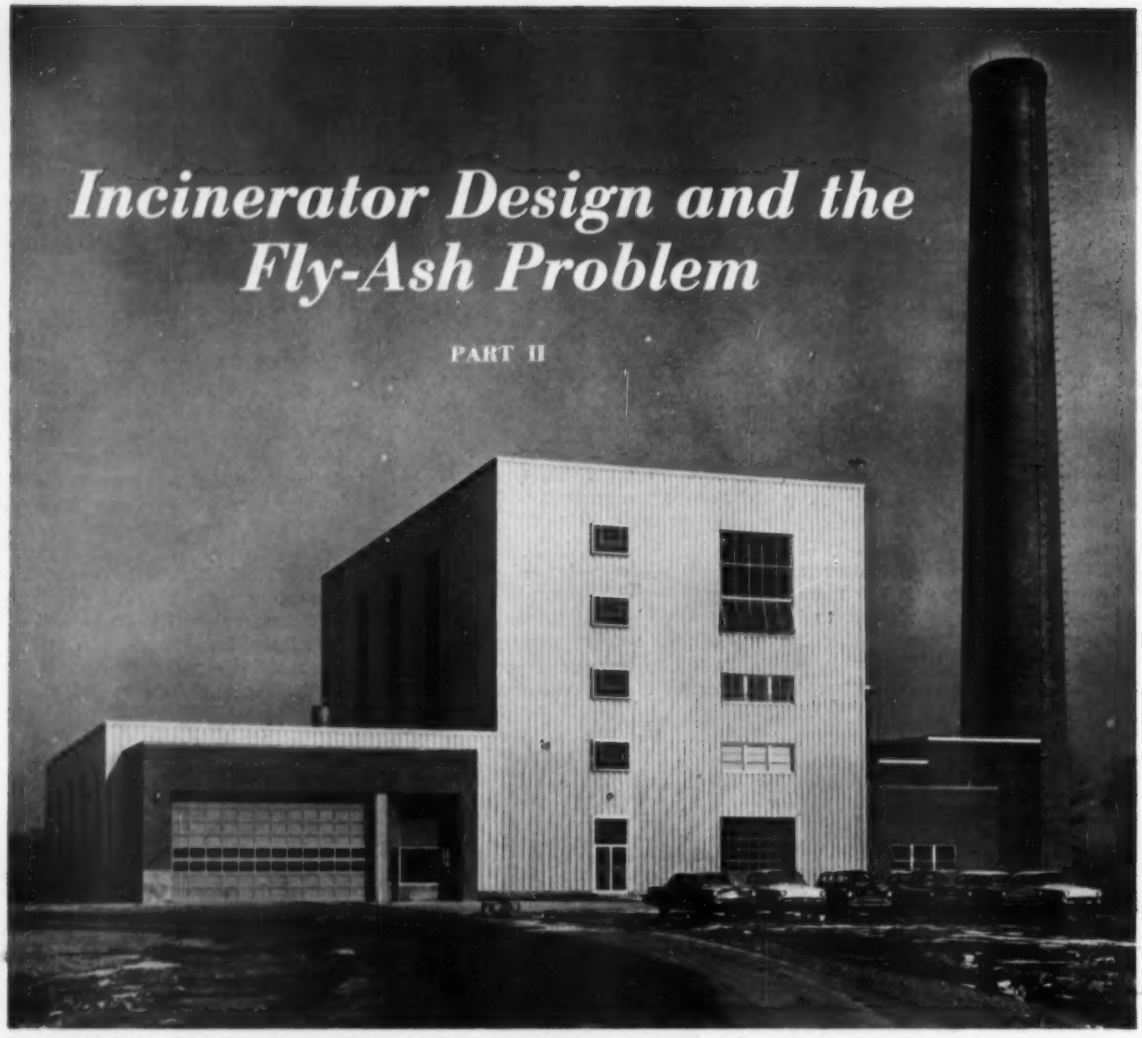
Treatment Operation

The principal unit that performs this double-duty treatment is a 70-foot Dorrco Hydro-Treator. This single compact structure is a combination unit of the upflow, sludge-blanket type. Raw water is fed in at the bottom where the chemicals are added. Water and chemicals are mixed and flocculated, and the water passes up through a heavy sludge blanket. Here the flocs are filtered out, and after passing through a clarification zone at the top, the clear effluent is overflowed at the surface along a peripheral launder.

The plant was designed by Dale H. Rea, consulting engineer of Denver.

Incinerator Design and the Fly-Ash Problem

PART II



Incineration to be nuisance free must be designed to tested engineering principles that govern all parts—from storage pit to stack. This incinerator, designed by the authors' firm, serves several communities in the vicinity of Royal Oak, Mich.

What happens when refuse burns; the amount of fly ash in the raw gas; a better fly-ash standard; and some design factors

By SAMUEL A. GREELEY,
SAMUEL M. CLARKE, AND RICHARD H. GOULD
Greeley and Hansen, Consulting Engineers
Chicago, Ill.

THE characteristics of refuse described in Part I of this series (see page 102 of the May issue), considerably affect the design and performance of refuse incinerators. The varying contents of combustibles, ash, and moisture result in great changes in the quantity and quality of the raw gases of combustion. The volume of the raw gases may range from over 600 to less than 200 cubic feet per pound of refuse as received.

The characteristics of the refuse which control these quantities may vary widely from hour to hour. This condition is an important factor in the performance of fly-ash removal facilities. Incinerators handling garbage and combustible rubbish have smaller and generally more uniform quantities of gas to contend with

than those incinerators which have to burn rubbish alone.

Furthermore, the high moisture and content of volatile matter in the refuse lead to some special considerations in its combustion as compared to other fuels. The combustion proceeds in four consecutive and overlapping stages:

1. Evaporation of the moisture
2. Distillation of the volatile matter into gas
3. Burning of the distilled gases
4. Burning of the fixed carbon.

The first two stages consume heat which is furnished by the last two. Because of the large proportion of volatile matter, much of the actual combustion takes place above and beyond the fuel bed. For this reason, it is possible to introduce a large proportion of the combustion air above the fuel bed. It is universal practice in municipal incinerators to provide "combustion chambers" separate from the furnaces proper, where the combustion of the distilled gases is completed.

Computations can be made to show the quantity of air needed to be supplied for combustion. The following breakdown is helpful to an understanding of the problem:

Item	Air Per Pound of Refuse (in pounds
Air to supply the oxygen theoretically needed for combustion	3.7
Plus 50% excess air found necessary for complete combustion	1.8
Plus excess air to hold temperature of combustion to 1,800° F.	2.4
Total	7.9

The foregoing unit quantities of air are for rubbish having 20% ash and 20% moisture by weight, and a heating value of 9,000 BTU per pound of dry combustibles.

For a refuse in which the ash amounts to 25% of the total dry solids, the following tabulation illustrates the variations of the gaseous products of combustion with variations in the moisture content of the refuse as received, if excess air is used to control the temperature of combustion at 1,800°F.

	Total Gaseous Products (1,800° F.)		% CO_2 By Volume	
% Moisture in refuse	Lbs. per lb. of refuse	Cu. ft. per lb. of refuse	Dry Gas	Wet Gas
20	8.7	490	9.1	8.2
30	7.1	410	9.9	8.6
50	4.3	250	12.9	9.7

Under operating conditions, the quantities of gas are generally higher and the CO_2 content is generally lower than has been indicated. These variations occur because of the impracticability of adjusting the air supply to the constantly varying characteristics and rates of burning.

Data on the quantities of particulate matter in raw gases from refuse incineration are limited. Chass and Rose* report that tests on various Los Angeles County rubbish incinerators show between 3.3 and 17.8 pounds of particulate matter per ton of rubbish, with an indicated average of 8.8 pounds per ton. These presumably refer to chimney discharges.

During a week's test of the Gansevoort plant in New York City, it was determined that the total particulate matter in the raw gas amounted to approximately 15 pounds per ton of mixed refuse. The chimney discharge was at the rate of about 10 pounds per ton of refuse.

A figure is indicated of about 25 pounds per ton of dry solids in the refuse for the particulate matter in the raw gas under average conditions. This would amount to about 20 pounds per ton of rubbish as received, or 12.5 pounds per ton of refuse with 50% moisture.

A sieve analysis of fly ash in the raw gases from the Gansevoort plant in New York City indicates the following distribution of sizes:

Screen Size U. S. No.	Microns	% by Weight Passing
20	840	97
60	250	78
100	149	67
200	74	49
325	44	33

Improved Fly-Ash Rules Needed

Existing rules and regulations applied to the discharge of particulate matter from refuse incinerators have utilized the criterion of particulate matter concentration in the gases under certain standard conditions. These have taken two forms:

1. The weight of particulate matter per 1,000 pounds of gas with 50% excess air, the usual limiting value being 0.85 pound as established in the A.S.M.E. model code.

2. The weight of particulate matter per cubic foot of gas at standard conditions. The standard set up by the Los Angeles County Air Pollution Control District is 0.40 of a grain per cubic foot of gas at 60°F, 14.7 psi absolute, and 12% CO_2.

Such criteria are difficult to apply in practice to the incineration of refuse because of the nonuniformity of the refuse, and because of certain operating procedures necessary with some types of incinerator furnaces. This is particularly true when it is necessary to burn down and clean out the furnace, at which times the CO_2 content of the flue gases is low and the proportion of excess air high.

A more logical criterion would appear to be the weight of particulate matter related to the weight of refuse burned, or preferably to the weight of dry solids in the refuse.

The two standards or regulations referred to above can be related to the suggested criterion, using the type of refuse shown previously, as follows:

	Pounds of Fly-Ash Permitted Per Ton of Refuse			
% Moisture in Refuse	Wet Refuse (at 0.85 lb./1,000 lbs. of gas)	Dry Solids	Wet Refuse (at 0.40 grain/cu. ft.)	Dry Solids
20	10.7	13.4	8.9	11.1
30	9.6	13.7	7.8	11.1
50	7.4	14.7	5.6	11.2

It thus appears that on the average, in order to meet existing standards fly-ash-removal equipment should have an efficiency, based on the raw gases, upwards of 50%.

It is our further belief that the standards adopted for particulate matter in the discharges from incinerator chimneys should be adjusted to the needs of each local situation. Among the factors which may change from locality to locality are: atmospheric or meteorological conditions; topography; characteristics of the municipality, as regards industry and other sources of air pollution.

It would be well, also, to consider in each locality whether or not the atmosphere has capacity for absorb-

* Publication details of this work will be included in the third and concluding installment of this article which will be published in the July issue.

ing certain quantities of pollutants, without adversely affecting the community. The degree of treatment and the strength of the treated gases might be considered in much the same way that the treatment of sewage is related to the character of the stream receiving the effluent.

In the preparation of plans and specifications for a refuse incinerating plant, the designing engineer and the responsible municipal officials must make decisions on many problems and factors other than those related to fly-ash removal from the raw gas.

Some of these matters, such as the selection of a site, the quantities and characteristics of the refuse to be burned, the choice between a floor-dump plant and a crane-and-bin plant, and the type or types of furnaces included, as well as important bases of design are often settled by the preparation of a preliminary report. The principal bases of design include the refuse-storage capacity, the grate areas, the furnace and combustion-chamber volumes, the capacity of forced-draft equipment, and the size and height of the chimney used by the incinerator.

During the actual design period there are many more problems for which definite answers must be found, such as the layout of the plant on the site and the arrangement of the several parts of the plant; the size, and the structural and architectural design of the building; the types of construction for and the detailed design of the furnaces, flues, and chambers; the equipment for handling the refuse and for charging it into the furnaces; the equipment for removing and handling ash; and the controls and instrumentation.

Design Factors That Influence Air Pollution

Again excepting structures and equipment for removing fly ash, there are a number of design factors which have a direct influence on air pollution because they affect the quantity of particulate matter in the raw gas.

First among these are the provisions made to insure that the combustion of both volatile matter and fixed carbon is as nearly complete as practicable. These provisions include adequate grate area; adequate volume and proper arrangement of furnace and combustion chambers; and equipment for introducing combustion air in the proper amounts and at the proper locations. These things are necessary to minimize the discharge of particles of unburned carbon, which may originate either in the fuel bed or in the distilled gases.

With the devices now available for partial mechanical stoking, burning rates of between 70 and 80 pounds of refuse per hour per square foot of grate area have proved adequate. For manually-stoked furnaces, rates of from 50 to 60 pounds per hour per square foot are considered desirable. The lower range of the rates are applicable to dry rubbish because of its high volume per unit weight.

Furnace Volumes

There is considerable experience to indicate that a combined furnace-chamber and combustion-chamber volume of 25 cubic feet per ton per 24 hours is adequate to accomplish the complete combustion of the gases distilled from a mixed refuse containing 50% to 55% of water. Of this amount, 10 cubic feet are commonly allocated to the furnace chamber.

Greater volumes are needed for drier types of refuse, and since the time required for complete combustion is constant, the chamber volume should vary with the computed volume of the gaseous products of combustion. Thus, referring to the typical gas volumes shown previously, a plant designed for burning dry rubbish should have a combined chamber volume approaching 50 cubic feet per ton of rubbish per 24 hours. Such a basis of design will result in heat released at rates of 10,000 to 11,000 BTU per hour per cubic foot of chamber volume.

Complete combustion also requires thorough mixing of the distilled gases with the combustion air. This can be accomplished by making the path of the gases as tortuous as practicable, in order to create turbulence. Thus, multiple changes in direction within the chambers and their connecting flues are desirable.

Air and Temperature

Introduction of the proper quantities of air for combustion and for temperature controls is fundamental to the satisfactory operation of an incinerating plant. Forced-draft fans should be used in preference to natural draft (for controlled delivery under and over the grates) because of the positive control available through variable speed drives or dampers.

Because the fans are sized for maximum air requirements and operate much of the time at lower rates, we justify the cost of variable speed drives by the reduced power costs not afforded by natural draft controlled by dampers. Computed air requirements vary from about 8 pounds per pound of dry rubbish to about 4 pounds per pound of mixed refuse, on the assumption that temperatures are to be held below 1,800°F, and that a minimum of 50% excess air is required.

The designer should take advantage of the fact that 80% or more of the combustion takes place above the refuse bed. Thus, he should make it possible to introduce most of the air at the top of the furnace chamber, in the combustion chamber, or both. This method of operation will minimize the introduction of solid particles to the gas stream as a result of the passage of air through the bed of refuse.

Stoking Problems

Particulate matter may also enter the gas stream during changing operations, when the bed of refuse is disturbed by stoking and when ash is removed from the grates. The great majority of present-day furnaces are batch-charged through openings in the top. Continuous charging, such as is accomplished in the New York City traveling-grate furnaces, should reduce the quantity of fly ash from this source. This disturbance of the refuse bed is less with any of the mechanical-stoking devices available than with hand stoking, but it is unlikely that hand stoking can be entirely eliminated in the burning of refuse.

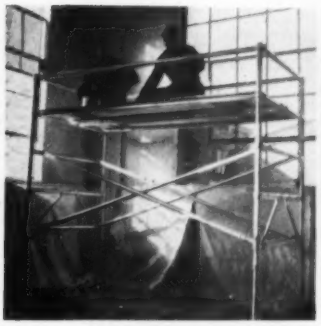
Some release of fly ash in connection with ash dumping is probably unavoidable, but it has been largely eliminated in the New York plants by the continuous discharge of ash from the traveling grates into a water bath which is sealed to prevent up-drafts.

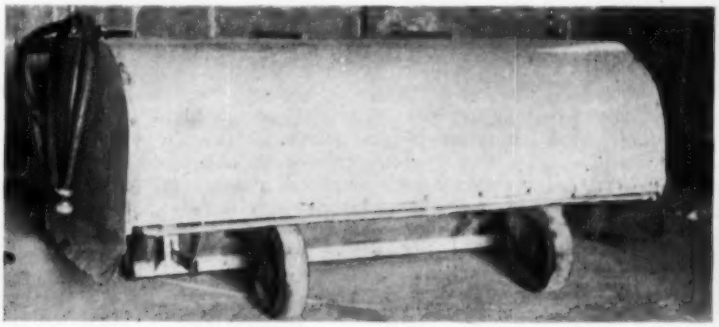
Omaha Incinerator Designer

Through no fault of the firm of Greeley and Hansen, some of the May copies of The American City carried a caption (page 102) crediting the Omaha, Neb., incinerator design to that firm. The error was discovered after the presses were running, but in time to make the correction in part of the edition.

The Omaha incinerator was designed by Richard F. Ferguson, consulting engineer of that city. We regret the mistake in identity.—THE EDITORS.

(Left) The Hydrocrane is used in all weather. To protect the operator, the men built a cab on the machine. (Center) Administrative Assistant Joseph J. Squillace (left), and Superintendent of Sanitation Louis DeLorenzo watch the truck-loader go into action. (Right) The refuse truck's forward compartment is for unburnables; the rear, burnables.





(Left) The maintenance shop will have a new office when the men complete their work. (Center) This sweeper will replace the loader bucket of the truck shown above when summer street-sealing begins. (Right) A steam cleaner is handy for engine repairs.

Equipment Hints from Hackensack

TWICE a year, Harold Reilly, city manager of Hackensack, N. J., musters out every bit of rolling stock that he can spare and sends it on a grand tour of the entire city. In this way, he gives the 30,000 people here an opportunity to see at firsthand what their tax dollars are buying. Mr. Reilly and his staff have long held to the policy of keeping municipal efficiency high by using the right sort of equipment. And every year, this parade has something new to offer.

One of the newcomers to the tour this year is a truck-mounted front-end loader that has proved to be a tremendously useful handyman. The city purchased it after a careful study of its ability to perform, and even went to the trouble of sending a representative to Norway, Mich., where it is manufactured, to see the unit in action.

New Loader Operation

The loader is the LoDaL; it has a ⅝-yard bucket lifted by hydraulically-powered arms and is controlled so that it either can pick up its load of dirt or street trash and swing it back into the truck box or into an adjoining truck. In picking up sweep heaps from the street, the LoDaL has eliminated the old method which tied up a front-end loader and operator. This convenience saves the city approximately 15 to 20 hours per week.

The LoDaL handles a variety of chores such as completely cleaning up parking lots when there is a snow storm, doing away with the need for a plow and then a truck by picking up its own snow and transporting it to the dumping area. The unit has also increased its usefulness by replacing the bucket with a sweeper attachment. Thus it follows street-sealing crews and picks up excess aggregate, salvaging the material and doing away with the annoyances of loose rock strewn through the streets.

Hackensack maintenance crews are particularly skillful in doing a great deal of work that others might send to outside shops. Last year, the equipment parade displayed a new, truck-mounted Hydrocrane. But the crane had no cab for the operator and the men felt that he needed protection so they built a cab.

For many years, a fleet of Gar Wood Load-Packers has occupied a prominent place in the parade. But recently, the men felt that the truck would be more efficient if they could separate the burnables from the unburnables in the body. So they supplied the collector with a sturdy hinged door, strong enough to insure good compaction of the burnables that pass into the truck through the hopper at the rear. The unburnables can be placed in the forward compartment either through large doors on the side or through an opening on the top. The burnables go directly to the incinerator and the unburnables are placed on the dump. The great advantage of this separation is that the same truck and crew pick up both types of refuse simultaneously.

The maintenance building was in need of office space so the men set about to supply this themselves. They placed floor tiles, paneled and plastered the walls, and supplied the final coating of paint. The city purchased an adjustable-height Safway scaffold to help with work of this type.

The automotive repair department is exceptionally well equipped and provides facilities to keep the city's entire rolling stock in good, operating condition. A steam cleaner helps to remove grease from the engines and other equipment.

What We Have to Do in Des Moines

A demand for water that outstrips population growth adds stimulus to orderly water-supply development in Iowa's capital city

By DALE MAFFITT, *General Manager*
and
M. K. TENNY, *Assistant Manager*
Des Moines Water Works
Des Moines, Iowa

A CITY'S water supply has to be planned to cope with its peaks. Its financial solvency, however, rests on its total pumpage. In Des Moines, as has been the case elsewhere, the peaks have been causing most of the trouble. We are now in the midst of a program to strengthen our distribution system, enabling it to absorb peaks without punishing the high-service pumping station.

Our distribution system will provide adequate service at a maximum rate of 42 mgd (million gallons daily). Our supply and treatment plant have been designed to deliver at a maximum rate of 48 mgd.

In 1947 these capacities looked good, for our peak was 33 mgd. We repeated this pumpage in 1952, but topped it with a peak of 40.1 mgd in 1953, and 45.9 mgd in 1954. Similarly, the peak hourly rate of 46 mgd, set in 1947, was equalled in 1952, rose to 58 mgd in 1953, and to 63 in 1954.

Des Moines has not been a mushrooming city. It has grown steadily and conservatively since its incorporation; at present, about 215,000 persons are served by the water works. However, Des Moines, like many other cities, is changing in character. Easy borrowing facilities have produced a spurt in home building. And each new homeowner uses more water to sprinkle lawns, wash his car, operate all the new household gadgets—from air conditioners to dish washers—that require more water than was needed in the past. Home building will undoubtedly taper off, but the demand for water will stabilize at a figure high enough to compel us to increase our water supply and distribution capacity by at least 50%. Prior to 1950, we connected less than 700 new services each year. Since 1950, we have installed from 1,300 to 1,750 each year.

TYLER STUDIOS, DES MOINES, IOWA

The new Nollen standpipe sets a pattern for better storage in the Des Moines system.

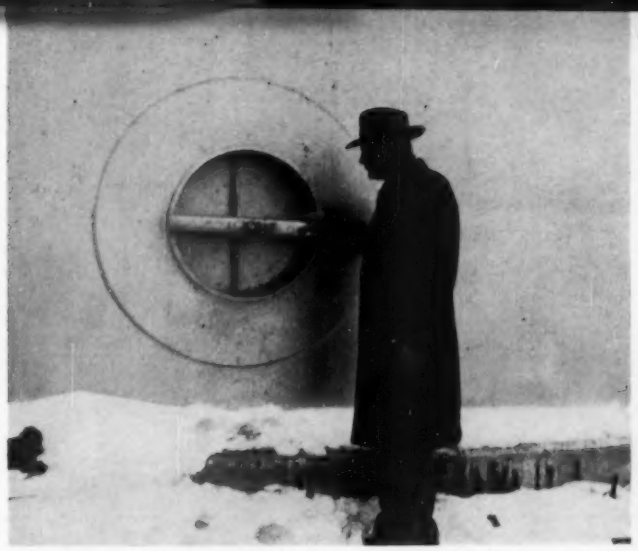
More Storage Provided

It is common knowledge among water-works engineers that peaks in distribution may be lowered by adequate storage. We are now providing some of this storage capacity and plan more for the future.

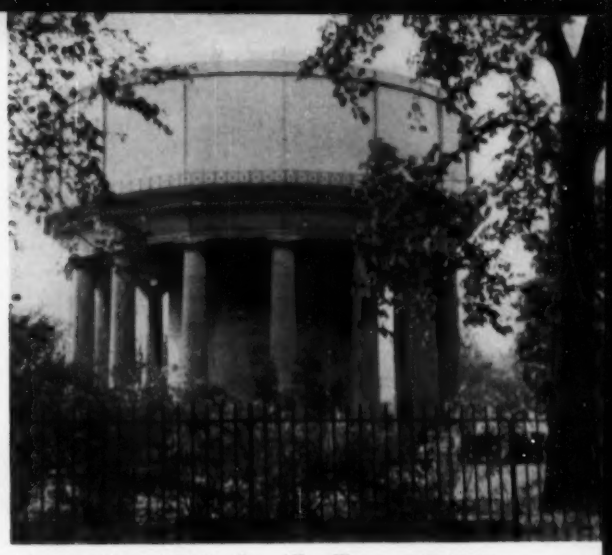
On a 10-acre plot, we have erected a new 4,000,000-gallon standpipe at the same elevation as our 1,000,000-gallon Allen Hazen elevated tank. Many have commented, incidentally, that the Hazen tower is one of the most beautiful such structures in the country.

Our new standpipe uses an S. Morgan Smith altitude valve to control its operation. The tank was fabricated by the Pittsburgh-Des Moines Steel Company and has been painted with coats of red lead, oil with a little litharge, and aluminum. It is named the Henry S. Nollen standpipe in honor of one of the first members of the Board of Water Works.

We are building two more such



The thermometer registered 10° below zero last winter when Assistant Manager M. K. Tenny made an inspection of the new Henry S. Nollen standpipe.



The beautiful 1,000,000-gallon Allen Hazen water tower commemorates the late, celebrated water-supply engineer.

standpipes. One will be another 4,000,000-gallon structure, located in the southeast section of the city, and will be named for Norman W. Wilchinski, another member of the original board. The third tank, yet unnamed, will hold 2,000,000 gallons, and will be located in the northwest part of the city.

The Nollen tank is connected to the distribution system with 3,500 feet of Lock Joint prestressed concrete pipe. An S. Morgan Smith 16-inch Rotovalve controls the closing of this connecting pipe. Since the overflow line of this tower is about 11 feet below the level of the overflow of the Hazen tower, this valve should open and close once each day. At the Wilchinski tank, where the overflow elevation is 14 feet below the level of the Hazen tank, we will use a Davis ball valve to control the closing and opening.

We are supporting this storage capacity with feeder main improvements that reach into the heart of the northwest residential district, and with another line that extends to the area east and south of the Des Moines River. These extensions represent a capital investment of $1,700,000.

Treatment Plant Revisions

Water-supply facilities and a treatment plant also are scheduled for improvement. Last July, we reached within 4% of the plant's rated capacity. While we are able to overload the plant for a few days, a 50% addition to the filters and basins certainly looks like a good investment. This cost amounts to $1,700,000.

Des Moines gets some of its water from pipe galleries located along the Racoon River, and some from a river intake. The Racoon serves up our entire supply. We do not draw from the Des Moines River because of the urgent need for this water by the local electric power utility, particularly during the dry, summer weather. Our treatment plant's primary function is softening.

A change in operation would allow us to not only increase our pumping capacity, but actually give us more space within the plant. For over 30 years, we have been using steam for high-lift pumping, and this appears to be as good a time as any to retire the old boilers that are flirting with antiquity.

An analysis of our present conditions indicates that we would save money by purchasing electric power for high-lift pumping, reserving the steam plant for emergency use. We can provide ourselves with 60 mgd of pumping capacity in the space now needed by our smallest 15-mgd steam pump, at a cost of about $300,000.

We probably will install vertical type of water pumps instead of the horizontal centrifugals. In these sizes, efficiencies are about the same for both types. The advantages of the vertical pumps are that they require much less floor space and can be constructed so that the electric motors and controls will stand well above flood stage.

Enlargements will also be made in the softening plant. The original design facilitates enlargement by permitting simple duplication of one-half of the present filters and the addition of one settling basin. In addition, we will install two new low-lift pumps with a total capacity of 40 mgd, and a new river intake.

Incidental to this construction are the improved facilities for the application of carbon dioxide to recarbonate the water and reduce the amount of growth on the filter sand. Other minor changes will be incorporated into the revisions based on present operating experiences.

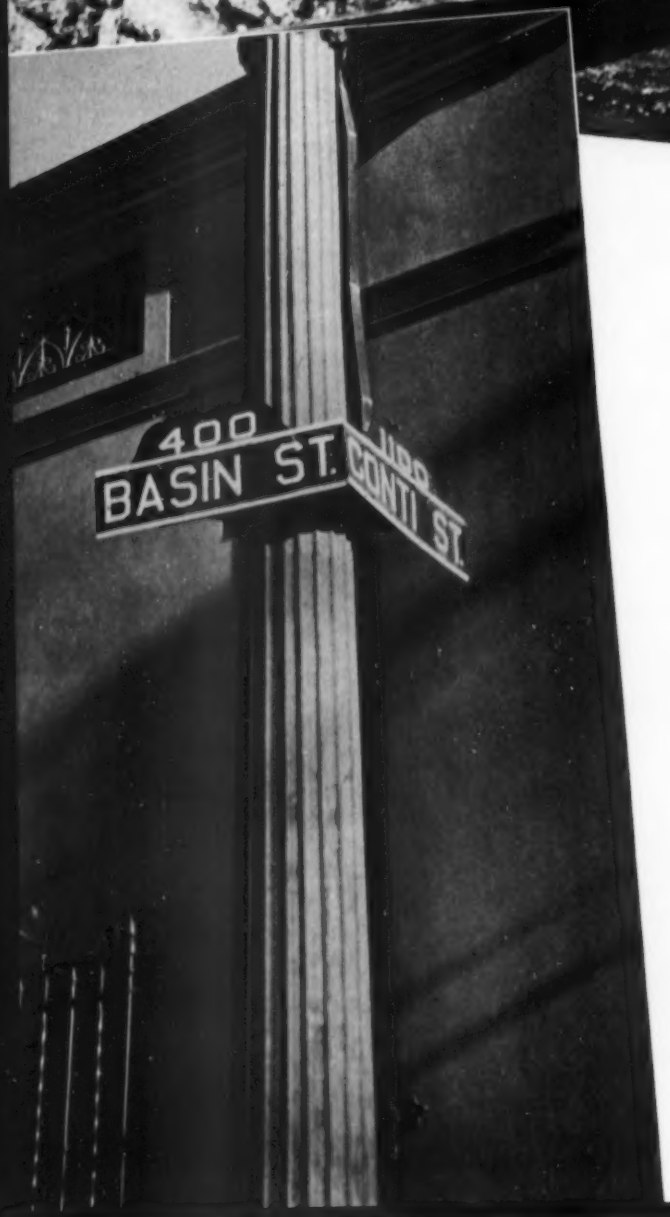
Raw-Water Storage

We will have to plan for more reserve storage of raw river water as well. We have an unusual reservoir that is filled by pumping from the river during periods when the water is relatively free from turbidity. If conditions demand it, we can release this impounded supply to replenish the ground water that feeds the infiltration galleries. Originally, this reservoir was built to provide an average pumpage of 28 mgd, double the yearly average at the time. Today this average is about 25 mgd.

Although we have never had to draw water from the reservoir, and may never have to, we are contemplating increasing its size. The cost of this work would not be great and would be well compensated by the supply that could be released should a drought strike the area.

No one can anticipate accurately future demand for water. Neither can one be absolutely sure of the extent of population growth. Regardless of what the future may bring, a strong framework can enable the system to adjust to these demands. Furthermore, improvements such as those currently under way will encourage strong and steady growth.

To aid us in constructing the present work and planning for the future, we have had the help of Alvord, Burdick and Howson, Chicago consulting engineers.



Basin Street Goes Modern

New Orleans rebuilds the street known to music lovers as the "birthplace of the blues"

BASIN STREET is growing beautiful; many will even say, respectable. It used to be a narrow, dirty street, split by a railroad track, grimy and soot-laden. Flickering gas lamps cast nervous and unsteady shadows on bawdy houses and cabarets that echoed haunting notes from the throaty voice of a singer, from the cry of a saxophone, a trumpet, a trombone, the pulsating drums and rhythmic murmur of a piano. In this ribald backdoor to the port city of the South was born an American folk music called the "blues."

Today, the railroad is gone; its station, at the end of

Basin Street—**its name strikes a familiar and haunting chord in the heart of modern music lovers. In former days it echoed with the tones of the saxophone, trombone, and drum. Today, its music is composed of the bark of a LeRoi compressor, the growl and scrape of a Caterpillar tractor with its Traxon loader, and the drone of a diesel-powered grader.**

Although the face of this beloved New Orleans street may be changing, the memories it evokes will ever remain the same.

the street, demolished; and the area where the rails once lay has been landscaped to form a beautiful park-like mall, flanked by a 44-foot-wide roadway, carpeted with asphalt on a concrete base. Overhead mercury-vapor lamps cast a clear, even light on the street.

There was a suggestion to change the name of this street, but the people would have no part of it. Music lovers who make pilgrimages to New Orleans may still find the street and hear the ghosts of those searching melodies that Basin Street gave to the world.

Elysian Fields is another street rich in New Orleans history that is currently being modernized. Those outside the city do not know it so well, but it means much to the people here who are familiar with their city's background. It lies on property once owned by d'Iberville, founder of the French colony in Louisiana. It served as the route for the Pontchartrain Railroad where traveled "Smokey Mary," a train that wrote early chapters in the nation's railroad history.

Two of the original canals that make New Orleans habitable trace their way down this street. In 1898, these canals were covered, and the covers strengthened in 1904 to support the trains that traveled over them. Engineers in New Orleans pay quite a tribute to the name of L. W. Brown, an early city engineer who designed the first of these modern drainage canals with such a clear eye to the future that never since has an engineer had to alter his basic plan.

Surfacing Historic Streets

To surface these historic streets, Director of Streets Albert B. Wyler and his staff are using a natural limestone-rock asphalt pavement. The raw rock asphalt that forms the basis of this mix comes from nearby deposits of limestone naturally impregnated with 4% bitumen. This material is crushed and pulverized to the following sieve analysis:

Sieve Size	% Passing
½-inch	100
⅜-inch	90
No. 200	8-15

The bitumen in the limestone has a penetration capacity between 12 and 50. Sand, equaling 25% of the mix volume, is added to the crushed limestone; the mix is heated to temperatures ranging between 270° and 350° F. More asphalt is added to bring the total bitumen content to 9% before it is placed.

Concrete Base

The concrete base that supports this asphalt surfacing is designed to provide 2,000 psi strength, reinforced with welded wire weighing 77 pounds per square foot. It is being built without contraction or expansion joints. The concrete base supports only that portion of the street that has been widened. The engineers believe that the surfacing over the old roadway is strong enough to require no further improvement.

The two streets have been provided with illumination by the steady, purple glow of 2,000 mercury-vapor lamps. The lights provide 1.2 lumens per square foot on the streets. They use G-E lamps and are placed 115 feet apart.

Basin Street and Elysian Fields have taken on a new modernity, typical of the dynamic progress of New Orleans today. But these changes have been made with deftness and respect for its heritage—so typical of this gracious city—so that the world will be able to sample the flavor of the Basin Street and Elysian Fields of years ago.

How Define Engineer And Engineering?

DURING the 75th anniversary panel of the American Society of Mechanical Engineers, held in Baltimore, Md., April 20, 1955, this question was raised by Professor John Bell Rae of Massachusetts Institute of Technology.

"In the course of my own work," said Dr. Rae, "I have had occasion to try to find a satisfactory definition of the term *engineer*. The one that I like best was given to me by a distinguished colleague on the engineering faculty of M.I.T.: *An engineer is a person who has had systematic training in the practical application of the findings of science.* This practical application gives to mankind the means to make progressively more efficient use of the physical resources that God has given us on this earth."

Webster defines an engineer as *"one versed in, or who follows as a calling or profession any branch of engineering"*; and *engineering* is defined, in part, as *"originally, the art of managing engines; in its modern and extended sense, the art and science by which the properties of matter and the sources of power in nature are made useful to man in structures, machines, and manufactured products."*

In shorter wording, an engineer has been defined as *"one who uses the forces of nature for the betterment of mankind."*

THE AMERICAN CITY is reminded, in this connection, of an article on "Relative Values in Public Health Engineering," published in our issue for April 1923, in which a prominent engineer of that day, the late Moses N. Baker, characterized engineering as the *"art and science of planning and doing a given task as well as it needs to be done at the least cost consistent with that end."*

Has any municipal or consulting engineer better definitions to suggest?

Is it true that small homes don't "pay their own way" in tax revenues? Here are some pertinent points on this frequent question

Small Homes . . . . Municipal Headache or Tonic?

By BELDON H. SCHAFFER
Acting Director, Institute of Public Services
The University of Connecticut
Storrs, Conn.

BUTTRESSED by a seemingly insatiable demand, America's home-building industry is straining to meet the needs of prospective owners of small homes costing not more than $13,000. Simultaneously, many communities in the nation are busily engaged in developing and enforcing zoning, building, and other regulations designed to limit or even prevent the construction of homes in this price range.

These opposing factors—a virtually unlimited demand for low-cost homes by growing families and an increasing community resistance to the construction of this type of home—create a serious political problem. Is restriction of low-cost homes in the best interests of the community?

Behind the obvious attempt by communities across the nation to discourage less expensive housing developments is the assumption that the low-cost home is a financial liability to the community. Tax yield from this type of residential growth is believed to be less than the cost of community services to the home and its occupants.

Recognition of the serious import of these restrictions has recently been given by the National Association of Home Builders. Placed on the organization's list of "urgent problems to solve," the problem has been attacked by designating a special committee of experts in the fields of community planning and education to "take stock of the question so that they can arrive at an answer that will benefit all concerned."

In almost every instance limitation of subdivision of former farm land into low-cost housing developments is not predicated by a desire to exclude specific types of families on a social basis. The desirability of new residents is generally not in question. Restrictions are substantiated on the basis of economics, not social standing.

There is "a virtually unlimited demand for low-cost homes . . ."

Actual Cost—Yield Status Unknown

The all-important yet unanswered question in this situation is the actual tax cost versus tax yield status of low-cost homes. While much thought has gone into devising methods which will limit or prevent their construction, almost no thought or research has been applied to determine whether financial liability is a characteristic of low-cost housing. Is a tax loss inherent in this type of housing, or is the "tax loss" a result of mechanics in our social and political system?

The measurement of the liability or

asset status of low-cost homes usually begins with the local cost of providing education. Two children of school age is the generally assumed average per home. Comparison of the tax yield of the average small home under current assessment practices to the community cost of educating two children in local public schools almost invariably highlights a tax deficit for this one service alone. The possible fallacy in this reasoning, however, is crucial. The number of children enrolled in public school from the "average" small home is a "guesstimate." It is rarely founded on an accurate count, yet this factor is consistently used in community discussion of the low-cost home problem.

In a recent pilot study * of 450 low-cost homes published by the Institute of Public Service at the University of Connecticut, the author found the average number of children enrolled in public schools for a home included in the sample to be .78. Although the sample is inadequate for any generalization, it does present the possibility of considerable error on the part of community policy makers where the cost of providing education to low-cost housing developments is used as a major reason for their exclusion.

Decision Based on Inadequate Information

It seems that a general lack of adequate information is a basic part of discussion of the small home community growth problem. We know little enough about the actual cost of educating children from subdivision areas. We know even less about the cost of providing other municipal services such as police and fire protection, public works, recreation, and general administration. Municipal records are not kept on a comparative cost yield basis, so it is a rare instance where a decision to restrict construction of low-cost homes is based on complete or near complete tax cost—tax yield information.

Adequate information is also unavailable concerning the less obvious but significant contributions to a community tax base created by the presence of residential areas. These include the establishment or expansion of tax-surplus properties such as retail stores, theatres, hotels, and public utilities, as a result of new residential growth. Very little is known about this indirect tax contribution, yet it must be accounted for in any just analysis of the problem.

Not to be ignored is the direct relationship between the availability of inexpensive housing and the success of a community industrial development program. Industrial concerns interested in relocating or expanding can more easily be induced to locate where their production and supervisory personnel can buy homes within a price they can afford. A growing community that outlaws the type of home industrial workers can afford is hindering community objectives through its own decisions.

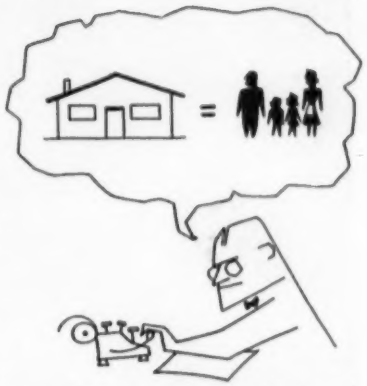
Limited Local Tax Base

Underlying the whole problem of low-cost homes and their place in community growth is the limited tax system on which local units of government depend for their revenue. Paramount in this system is the general property tax. It is the yield from this source compared to the cost of community services rendered that forms the basis of most arguments against low-cost housing developments.

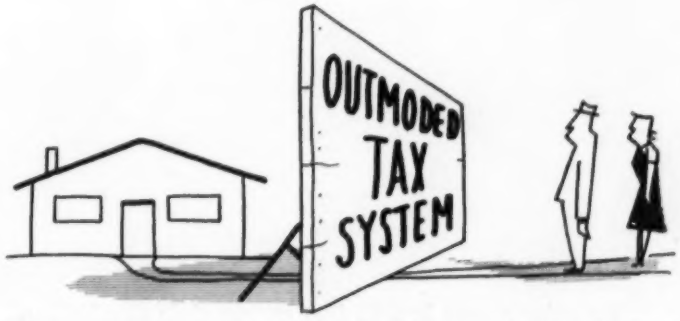
No community wants to regulate its growth on the basis of the economic means of its new residents, yet dependence on property taxes as the major local revenue source in many instances leaves no alternative. If the system of taxation is responsible for depriving many American families from the opportunity of home ownership, the system should be changed rather than needlessly drastic building restriction being imposed.

There can be no doubt that community fathers have an obligation to encourage, not hinder, the attainment of the cherished objective of a majority of American families—home ownership. Their action on this community problem is significant in the light of population and school statistics which clearly point to a greatly accelerated demand for homes in the next decade. Desirable land for residential development already has become a scarce commodity in many suburban areas across the country. Forcing families to purchase more land than they want and need, and more than would be required for a reasonable degree of spaciousness in a zoning ordinance, is not enlightened leadership.

Policy makers are confronted with a problem that is not unsurmountable. It does require study and foresight, and each community will have to meet the problem according to its own desires and circumstances. But the stakes are high. Home ownership is a very desirable objective, both for the economic health of the nation and the well-being of family life. Lack of adequate information, an antiquated or poorly administered tax system, or failure to utilize the full economic capacity of property should not force American families to purchase land and homes which will jeopardize their family budgets.



"Two children of school age is the generally 'assumed' average per home."

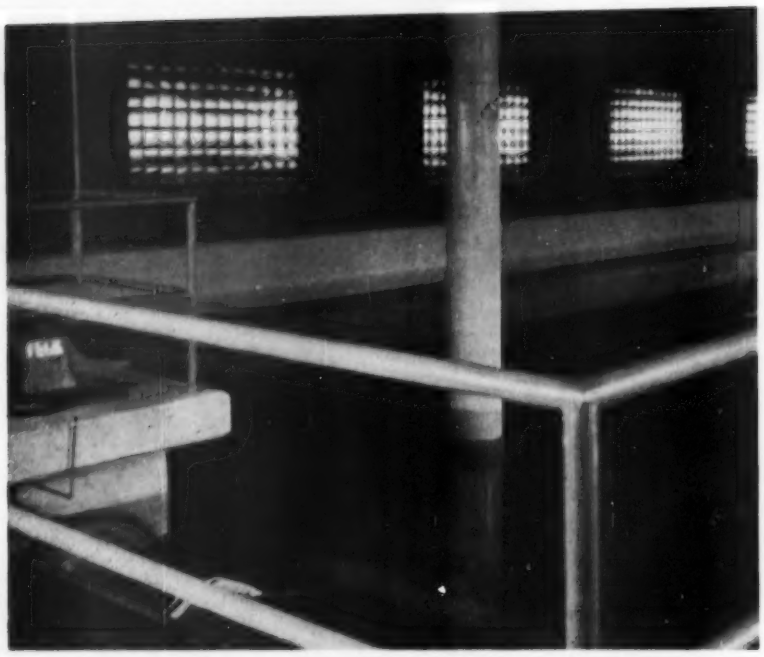


"If the system of taxation is responsible for depriving many American families from the opportunity of home ownership, the system should be changed . . ."

* "Small Homes and Community Growth," by Beldon H. Schaffer, is available from the Institute at 25 cents per copy.
See also "Planning Study Shows Municipal Costs for Different Land Uses," page 117 of the May issue of THE AMERICAN CITY.

crease their effective capacity. The

There is "a virtually unlimited demand for low-cost homes . . .



The new settling basins have continuous sludge-removal equipment.

Small city puts more production economically into its water works

Water Plant Expands To Meet Demands

By DONALD E. HAZELSWART
Superintendent and Chemist
Defiance, Ohio

IN 1920, Defiance built a 2-mgd (million gallons per day) water-filter plant that drew on the never-failing supply of the Maumee River. This plant served a population of about 7,000 and a limited amount of industry. It promised to remain adequate for all time to come.

Today Defiance has grown to 11,000 persons and has developed "thirsty" industries such as a brewery, a milk processing plant, and a bottling works that demand the bulk of the city's water supply. The moderate but steady growth of our population plus the heavy demands of industry compelled us to rebuild the 35-year-old plant so that it now can deliver 5 mgd.

The old 2-mgd plant served our needs until the close of the last war. But, in 1946, the city realized that the demand for water was going to continue to exceed the capacity of the plant to deliver. Consequently, the city council retained the engineering firm of Finkbeiner, Pettis and Strout, of Toledo, which recommended certain changes that both boosted our capacity and made the plant more efficient.

The author emerges from the front entrance of the filter building.

Plant Capacity Augmented

At that time, the city installed two 500,000-gallon filters for added capacity. We also installed a quick-mix unit and flocculators to make the coagulation of our chemicals more thorough. We installed automatic sludge-removal equipment in our 250,000-gallon settling basins to in-

crease their effective capacity. The program also included a 250,000-gallon clear well and a 300,000-gallon elevated tank to give us more adequate reserve supply.

This was only temporary relief. By 1950, new factories, homes, and air conditioners made such demands for water that even the new equipment was inadequate. We then again retained the engineering firm with instructions to redesign our plant and distribution system so that it could deliver at least 5 mgd.

The first consideration was raw-water supply. We abandoned the old pumphouse and built a new one. We had been using two electrically powered centrifugal pumps, each rated at 1,750 gpm against a 50-foot head; one gasoline auxiliary to pump raw river water; two 900-gpm; and a 1,200 electric centrifugal that operates against a 160-foot head to handle treated water. Due to the undersized piping, these pumps could not deliver. The intake, a cast-iron 30-inch line with 1-inch holes in the end plate, gave us trouble during cold weather by becoming plugged with pin ice.

The big, dual-powered pump gives insurance against emergency power outages.

The Pumphouse

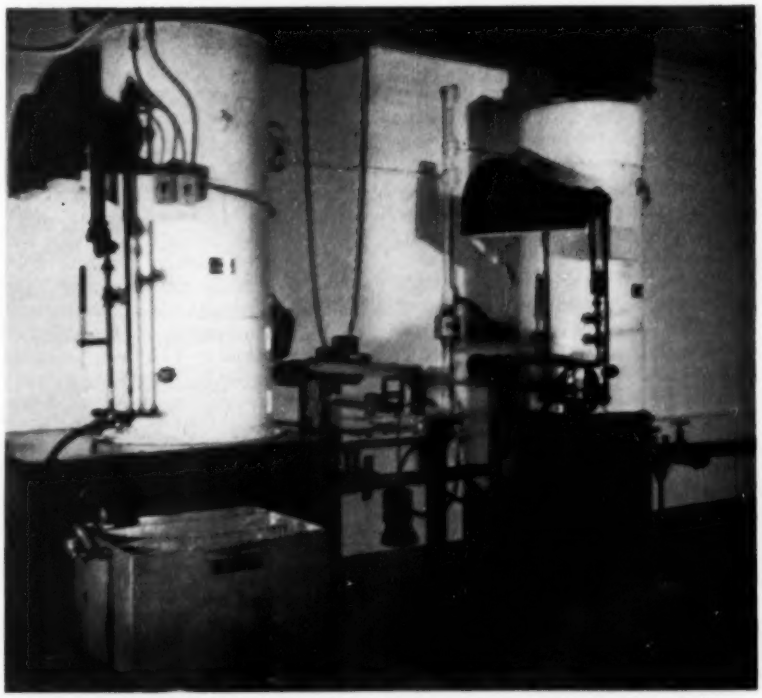
The new pumphouse is down stream from the old. It is a brick-and-concrete structure—94 feet long and 30 feet wide—that stands well above any foreseeable flood stage. The interior includes a river well, pump floor, and balcony. It uses two electrically powered Peerless turbine pumps, each rated at 1,400 gpm against a 65-foot head to lift the river water from a level of 40 feet beneath the building and pump it 50 feet higher to the filter plant. In addition, it has a 2,100-gpm Peerless turbine that can be driven either through an electric motor or a 50-hp Waukesha gasoline engine. Turbine pumps were used because they need not be primed. We start them by remote control.

Water enters the suction well through a channel that extends into the river. The intake portion of the channel has a Rex Chain Belt traveling screen that clears away the debris. The pump floor also contains three high-service centrifugal pumps below the water level of the clear wells.

A 62.5-kva emergency generator and a 60-hp Amesteam generator are also situated on the pumphouse floor level. The 440-volt switchgear for pump station and treatment plant are on the west balcony and two 3,500-gpm wash pumps are on the south balcony.

Two of the high-service pumps are electrically-powered Peerless centrifugals, rated at 1,400 gpm against a 185-foot head and are powered by 100-hp U. S. Electric motors. The third, a Peerless centrifugal, powered either by electricity or by a 125-hp Waukesha gasoline engine, can deliver 2,100 gpm against the same head.

The Peerless turbine pumps on the balcony level supply filter wash water directly from the clear well. Each pump has a capacity of 3,500 gpm against a 35-foot head. Formerly, we used a 50,000-gallon elevated tank for this purpose. The high-service pumps tap directly into the old clear well by way of a small suction well and deliver through a 24-inch, cast-iron manifold which branches into two 16-



Soda ash (left) and alum or iron salts (right) pass through new chemical feeders.

A crane lays pipe across one of the two river crossings of the water-improvement project. One, across the Auglaize, used 400 feet of 12-inch Clow cast-iron pipe.

inch, cast-iron feeders to the town.

Turbidity ranges from 10 ppm to 3,000 ppm and averages 150 ppm most of the year. Its alkalinity ranges from 290 ppm to 75 ppm as calcium carbonate, averaging 130 ppm, while its hardness averages 200 ppm and ranges from 100 ppm to 500 ppm, also measured as calcium carbonate. It has enough magnesium to be troublesome and has a bacterial coliform index that has been as high as 28,000. Its chlorine demand ranges between 8 ppm and 10 ppm.

Water Treatment

With our up-dated plant, we make this raw water crystal clear. We lower the hardness to 130 ppm, the magnesium count to 8-10 ppm. We make the water stable, noncorrosive, biologically pure, and free from offensive tastes and odors. To do this, we treat the water with lime, soda ash, and a coagulant of either alum or iron salts, preferably Ferri-Floc, carbon, chlorine dioxide, and, of course, chlorine.

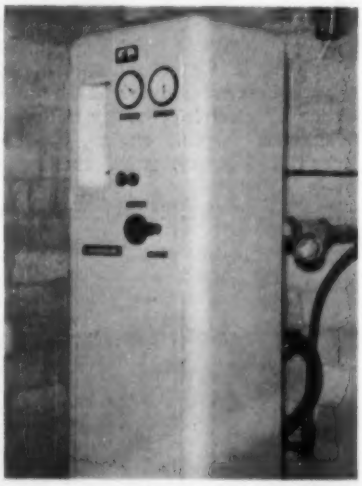
We had to replace our chemical feeders, worn beyond practical repair, remodel some old basins, add new ones, install new filters, and another clear well. We replaced the filter gauges and the too-small pipeline from the settling basin to the filters with a 2-foot by 2-foot flume which was open on top to facilitate cleaning.

Our worn-out recarbonation unit was replaced with a Gas Atmospheres unit of a guaranteed capacity of 75 pounds of carbon dioxide per hour at 6 pounds of pressure. Next, we tied in the new 24-inch raw-water line to the filter plant with an 18-inch Ross float-control valve. Incidentally, both this line and the 24-inch effluent lines have Builders-Providence venturi meters. We supplied an additional quick-mix basin, equipping it with an American Well Works unit. This has a 3-hp motor that turns 15-inch blades at the rate of 230 rpm. The basin is 5½ feet wide, 6½ feet long, and 10 feet deep.

Flocculation

We also built a new flocculator basin that is 14 feet wide, 58 feet long, and 10 feet deep, equipping it with Jeffrey flocculating paddles which are interspersed with four wooden baffles. A 1½-hp motor drives the paddles at a peripheral velocity of 2 feet per second through a Falk reducing gear. Wooden gates are arranged to permit us to use either the old quick-mix and flocculator basins, the new basins, or both if we wish.

The new flocculation basin has been covered with a concrete floor and enclosed to provide space for chemical storage and mechanical loading. An opening on the side facing the driveway has been supplied with a Jeffrey bag elevator to take some of the hard work out of chemical handling. A new Fischer & Porter chlorinator occupies a walled-off corner of the room which features an outside vent and fan, and a floor-level scale to facilitate loading full 150-pound cylinders.



The water-treatment plant at Defiance, is served by a Fischer & Porter chlorinator.

We removed the concrete baffles from the old flocculator basin and supplied two transverse sets of paddles. Over this old basin, we placed a new concrete floor and use it for the location of our new 1,000-pound Omega lime slaker and two feeders, retaining the old slaker for standby use. An Omega bucket elevator and screw conveyor fills the alum and soda machines from the new chemical storage room, eliminating dust from the plant. Another similar bucket-and-screw set up fills the lime machine from our basement storage room where the lime dust is confined.

Our activated carbon feeder, a modified Omega Fluoridizer, sits in the new chemical storage room and feeds into the raw-water inlet through a rubber hose. Bagged carbon is stored beside the machine. The alum solution is fed into the river water flume by a 2-inch hose; lime feeds into the mix chambers by means of a split box, and soda into the flocculator basins by another split box.

Our new settling basin, built parallel to the two old ones of 25,000 gallons each, features a roof of precast-concrete joists with cinder-block inlays. The center cylindrical pillars are of reinforced concrete, as are the ceiling beams. This new basin also contains Chain Belt continuous sludge-removal units that operate through a Falk speed reducer.

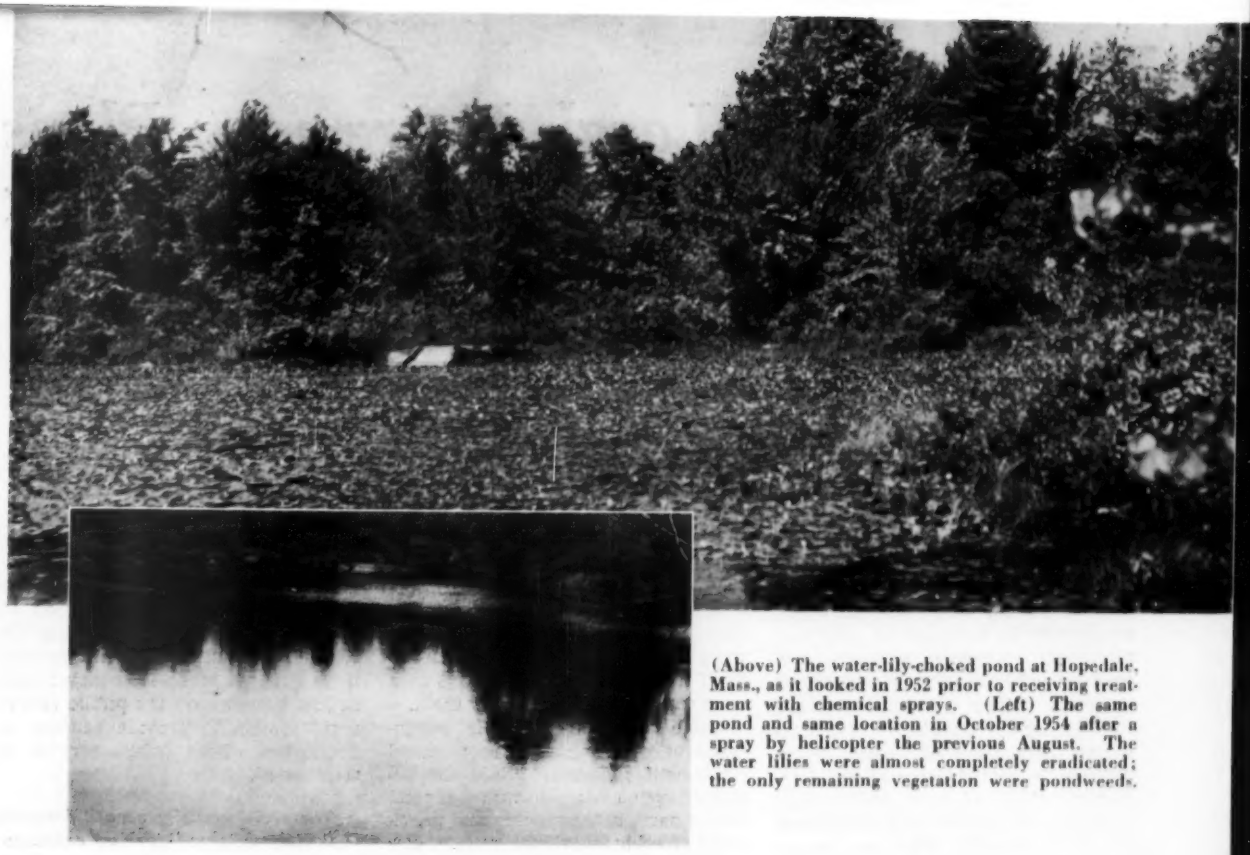
New Filters

We also supplied more filters and clear-well capacity. The four new filters each are rated at 500,000 gallons daily and are controlled by Darling hydraulic valves. Simplex controllers and the new Simplex diaphragm gauge units for loss of head and rate of flow. They work from F. B. Leopold table valves on marble tables.

The filters have Palmer surface washes to clean the filter sand. The filters are rated at the standard 2-gpm per square foot of filter area and use Clow cast-iron pipe throughout. We use Builders-Providence meters to measure the raw water, plant effluent

(Continued on page 175)

The entrance valve to the Auglaize River crossing which serves as a direct line from the plant to the east tank and balances pressures on both ends of system.



(Above) The water-lily-choked pond at Hopedale, Mass., as it looked in 1952 prior to receiving treatment with chemical sprays. (Left) The same pond and same location in October 1954 after a spray by helicopter the previous August. The water lilies were almost completely eradicated; the only remaining vegetation were pondweeds.

Let's Clean Up Plant Choked Ponds

Park superintendents will be interested in this experiment that uses chemical sprays to kill unwanted water plants

By ARMAND LEPORE
Chemical Insecticide Corporation, Brooklyn, N. Y.

ARE chemical sprays the answer to the problem of water plants that clog lakes and ponds? Although chemical weed control is still in its infancy, the results of recent tests on a water-lily-choked pond in Hopedale, Mass., offer hope for quick death to the unwanted plants.

For years the water plant problem has perplexed many a park man throughout the country. Up to now the answer has been to bulldoze the choking lilies or pull them out by some other physical method. But this has proved to be only a temporary relief, for in a short time the bothersome plants were back in force. The recent tests performed on Hopedale Pond indicate that an effective and simpler answer to the problem lies in the use of certain chemical sprays that are now on the market. Here is the story of the tests that were performed in Hopedale, Mass., by that town's Park Commissioner Warren B. Arnold, and its Tree Warden W. C. Sanborn.

Pretest Situation

In July 1952 when the tests were started, Hopedale's 80-acre man-made pond was so infested with water lilies that from a distance it was practically impossible to see the water. Although shallow over a large portion of its area, the pond had been used for swimming and fishing in its deeper areas. Like most ponds throughout the country, the water body had been appreciated for the beauty that it added to the community's landscape. But the heavy infestation of aquatics was gradually wiping out all of these former advantages. It was a good place to see what could be done with chemical sprays.

The tests were aimed at answering three questions: what herbicides now on the market are most effective; at what concentration is the best herbicide most effective; and regardless of whether or not the water plant is destroyed right down to the root, what "kill" will be obtained from an application of the herbicides?

Here's how the tests were conducted: A pilot area was staked out for initial investigation. Four separate plots were laid out and each was sprayed with a standard herbicide. The following four herbicides were used:

(a) 2,4-D ester weed killer containing 3.34 lbs. of acid equivalent to the gallon. This was applied at a concentration of 1 to 200.

(Continued on page 215)

have Lunders-Providence venturi meters. We supplied an additional Omega lime slaker and two feeders, retaining the old slaker for standby from the plant to the east tank and balances pressures on both ends of system.

Coordinating Local Retirement Plans with Social Security

Amendments to the Social Security laws make it possible to coordinate existing local retirement plans with the federal social security system. Here is discussion of the advantages of coordination.

Prepared by the staff of EDWIN SHIELDS HEWITT AND ASSOCIATES*

AMENDMENTS to the Federal Social Security Act in 1954 make it feasible for the first time for social security to be extended to state and municipal employees who are covered by public employee retirement systems. Many municipalities are considering the possibility of coordinating their plans with social security, that is, participating in social security and, in addition, maintaining a retirement system to provide supplemental benefits. ***What are the possible advantages of a coordinated program?*** Acquiring social security coverage is by no means a cure-all for the problems of public retirement plans. A study of each individual plan, its provisions, and its problems is needed to determine the feasibility of coordination. ***What are some of the factors to consider in developing a coordinated program?***

Differences in Purpose

In considering coordination of federal social security with public employee retirement plans, it is important to bear in mind the different purposes of the two types of systems.

The most essential difference between these two types of programs is that social security intends only to provide for a basic or "floor" level of retirement benefits. A retirement plan, on the other hand, attempts to provide a benefit sufficient to maintain a standard of living in retirement that is in some degree proportional to that enjoyed during a member's working years. Hence social security places much less emphasis on service and salary in the benefit formula.

Another point of important difference is that a retirement plan serves certain personnel policies, such as the attraction of well-qualified employees. Such personnel considerations are not a part of the objectives of social security, although the absence of social security coverage for a particular group may result in personnel problems. The two programs are complementary. They are not alternative programs, and neither program by itself is likely to be as effective as a wise coordination of both of them.

There are many possible advantages of establishing a coordinated retirement program. While the design of such a program would depend on the particular purposes and provisions of each individual system, certain general points that may be pertinent are worth mentioning.

Extension of social security to public employees will provide a degree of continuity of retirement and survivor protection to employees who move between public and private employment.

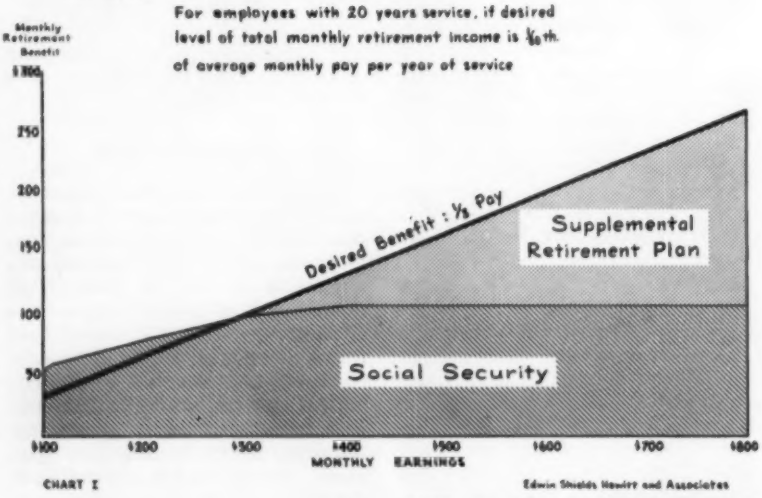
Since a person's social security record is not discontinued when he transfers from one covered job to another, he does not risk losing his accrued protection under the system if he changes jobs. This may result in less pressure on the public retirement system to provide benefits to employees whose public service is terminated.

The social security benefit formula is heavily weighted for low earnings. A retirement plan benefit formula is heavily weighted for length of service and income level.

A person with an average monthly wage of $175 is entitled to a retirement benefit of $73.50 per month; a person with an average wage of double that amount would receive $108.50 per month. Because of this weighting, the social security system is particularly well suited to fulfill the retirement needs of short-service or low-earnings employees. The public

* Edwin Shields Hewitt and Associates, Libertyville, Ill., is an organization of independent actuaries, analysts, and advisors on pensions, profit sharing, deferred compensation, and employee benefits.

Example of Retirement Benefits Under Coordinated Plan



were performed in Hopedale, Mass., aquatics was gradually wiping out

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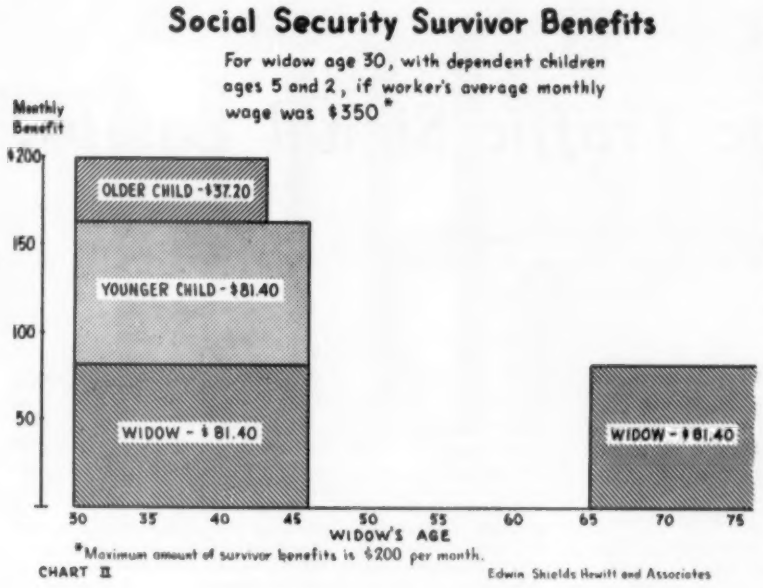

Social Security Survivor Benefits
For widow age 30, with dependent children ages 5 and 2, if worker's average monthly wage was $350*
Monthly Benefit
$200
150
100
50
OLDER CHILD - $37.20
YOUNGER CHILD - $81.40
WIDOW - $81.40
WIDOW - $81.40
30 35 40 45 50 55 60 65 70 75
WIDOW'S AGE
*Maximum amount of survivor benefits is $200 per month.
CHART II
Edwin Shields Hewitt and Associates

retirement plan under a coordinated program thus could place less emphasis on providing a minimum benefit for all employees and could concentrate on fulfilling the needs of the long-service career members.

Chart 1 presents an example of how a coordinated plan might work for employees retiring after 20 years of service if the total desired level of monthly retirement income equalled 1/60 of average monthly pay per year of service. As the chart shows, social security payments by themselves meet the desired benefit level for employees earning up to about $300 per month in this example; for those with higher earnings, a supplemental benefit from the public retirement plan is needed to achieve the desired level.

The social security system pays benefits to a deceased worker's dependent children, and also to his widow if she has dependent children in her care.

In addition to a lump-sum payment of up to $255, the system pays monthly benefits of up to $200. Chart 2 shows the monthly benefits to which a widow, age 30, with minor children age 5 and 2 would be entitled if the insured worker's average monthly wage were $350. In this example, the family would receive a total of $37,060.80 and, assuming that the widow would live to age 76, she would receive an additional $10,744.80 in monthly benefits after age 65.

Under a coordinated program, a public employee retirement system that presently has no survivor benefits would add a valuable characteristic to the program. For those plans which do have survivor protection, social security coverage may allow greater benefits or may lift some burden from the plan and permit strengthening of other features.

Employees may qualify for full social security benefits after comparitively short periods of service because of the provisions for a "new start" beginning with January 1951 and for dropping from benefit computation up to five years of lowest earnings. Thus state and local government employees who are covered by social security as of January 1956 may eventually qualify for full benefits, even though they had no social security coverage from 1937 through 1955.

For many public plans which are suffering under large unfunded accrued liabilities, coordination may substantially reduce this liability. For example, a proposal to coordinate social security with the U. S. Civil Service Retirement System which was presented to Congress in 1954 would reduce that system's unfunded accrued liability from about $10.7 billion to about $7.1 billion, a 34% decrease.

In another proposal, it was estimated that coordination of the Philadelphia Municipal Employees Retirement Fund with social security would reduce that Fund's accrued liability by $30 million.

There are, of course, many problems involved in formulating the detailed specifications of a workable plan coordinating social security with public-employee retirement plans. For example, what benefit formula can be devised which will not impair the protection presently afforded to employees covered by existing plans? If the public plan now permits retirement at full benefits before age 65, what can be done about the period after retirement and before the employee is eligible for social security payments? What policy should be followed with respect to those who retire after the effective date of coordination but before they have accrued enough coverage to be eligible for social security benefits?

Coordination Being Studied

These and a host of other specific questions have to be answered in designing a coordinated program. However, the potential advantages of coordinating social security with public-employee retirement systems are inducing many state and local governments to study methods of effecting such a program.

Proposals for City Housing And Planning Departments

CREATION of a municipal housing department in each city, as a means of developing a comprehensive and effective housing program, is proposed in the March 1955 *Journal of Housing** by Howard A. Hallman, Metropolitan Consultant, Philadelphia Housing Association.

The components of such a program, as analyzed by Mr. Hallman, include housing code, building code, fire code, zoning ordinance, subdivision regulation, housing quality survey, housing market analysis, public housing, comprehensive planning, capitol budget, redevelopment—all of which must be tied in with related public improvements.

He feels that the hodgepodge resulting from a diversity of agencies working on these many parts of the problem may best be cured by administrative consolidation. He proposes that the city planning function be assigned to a separate department of the municipality and that all housing functions go into a second such department, with the two departments working together on many key parts of a housing program.

* Published by the National Association of Housing and Redevelopment Officials, 1313 East 60th St., Chicago 37, Ill.

What Price
Long-Life Traffic Signal Lamps?

By JAMES D. HALL, *Lamp Division*
Westinghouse Electric Corporation
Bloomfield, N. J.

HARDLY anyone, and certainly not a traffic engineer, would underestimate the importance of traffic signals. Of course, the heart of any such device is the light source or the lamp. Its selection is perhaps next in importance to determining placement of the traffic signal.

Light output and life are the two most important factors to consider when selecting a lamp for traffic-signal service. The first is important in obtaining adequate signal indication; the second in keeping labor cost of lamp replacements within reason. As it happens, these two qualities have an inverse ratio relationship. A great quantity of one can be had only at the sacrifice of the other. So the question arises: Which is better, long life or high output?

If one would judge from today's general selection practice, long life is the most important quality. Traffic engineers are inclined to argue that maintenance costs are higher than ever, making replacement costs just short of prohibitive. So they decide on long life. It sounds reasonable, but is it? Studies indicate that in many cases it is not. Here is why:

With increases in street illumination and with the ever-mounting number of neon and incandescent lamp signs offering severe competition to most traffic-signal lights, continuous re-evaluation of all factors involved is necessary if performance of signal equipment is to meet the challenge of constantly changing conditions. The present and somewhat indiscriminate tendency to operate standard lamps at a voltage lower than that for which they are designed (see table) or to use lamps of low efficiency in order to obtain long life can but result in lowered standards for traffic-signal lighting. When measured by the potential results of even a single traffic accident, the over-all savings accruing from this practice are open to question.

Effect of Under-Voltage Operation on Traffic-Signal Lamp Performance

Watts		Rated	Operated on 120-Volt Circuit		
Nominal	Rated	Volts	Wattage	Initial Lumens	Laboratory Life-Hours*
60	60	120	60	665	2000
60	62.5	125	58.8	600	3600
60	65	130	57.6	535	6800
67	67	120	67	710	3000
67	69.8	125	65.5	630	5700
67	72.6	130	64.2	560	10500

* Because of shock, vibration, and other adverse conditions, service life usually is appreciably less than laboratory life.

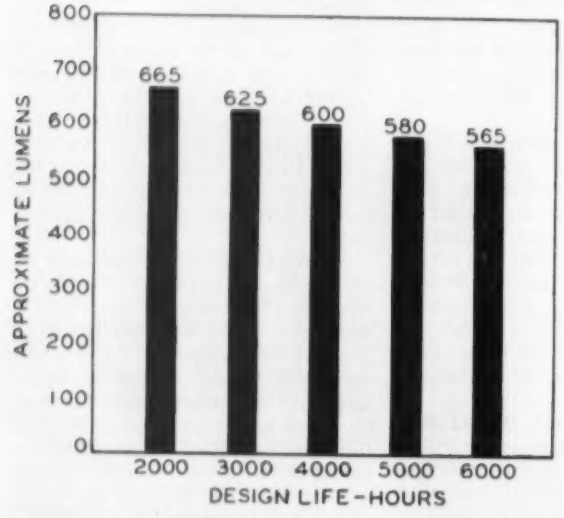


Fig. 1—The relationship between lamp life and light output, of a 60-watt traffic-signal lamp. If the life of a lamp of a given wattage is increased, a reduction in light output follows.

An incandescent lamp produces light by virtue of a tungsten coil (the filament) heated to incandescence—the hotter the filament, the greater the light output and vice versa. As a lamp burns, the tungsten wire vaporizes gradually until finally it fuses or breaks. The higher the filament operating temperature, the faster the tungsten vaporizes and the sooner the lamp burns out. Conversely, the lower the temperature, the slower the vaporization and the longer the life of the lamp. Hence it is seen that if the life of a lamp of a given wattage and type is increased, a reduction in light output because of lower filament temperature most surely follows (Fig. 1).

Longer Life Lamps Were Needed

In recognition of the need for lamps of longer life and also of the importance of maintaining traffic-signal lighting standards, some years ago there was developed a line of 3,000-hour signal lamps having essentially *the same light output* as the previously available 2,000-hour lamps. This was accomplished by simply increasing the lamp wattage sufficiently to compensate for loss of light caused by the increased life. Thus a 60-watt, 2,000-hour lamp and a 67-watt, 3,000-hour lamp produce essentially the same amount of light; likewise, 100- and

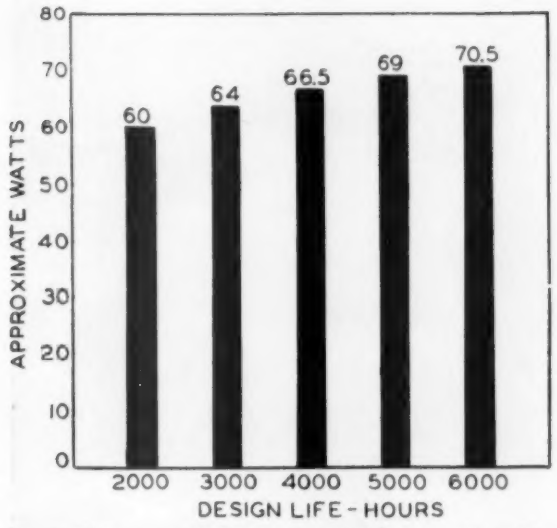


Fig. 2—Wattage required to produce 665 lumens with traffic-signal lamps of various lives. If light output is to remain unchanged, life cannot be increased without increasing wattage. Data shown are for *initial* light output. Due to greater bulb blackening with increased wattage, in practice the wattage is somewhat higher than shown (for example, 67-watt, 3,000-hour, commercial practice) so that maintained light output throughout life does not suffer.

111-watt lamps have approximately the same light output.

If, admittedly, traffic-signal lighting standards should not be lowered, an increase in lamp life should be accompanied by a compensatory increase in wattage (Fig. 2). The question then arises as to whether the increase in power costs is equal to or greater than the possible savings in the cost of maintenance.

A long-life, low-output lamp installed in a new traffic signal might well produce a satisfactory light level when first installed. However, later dirt accumulation on the lens and reflector of this same signal often reduces its lighting level to the danger point. If the lack of periodic cleaning schedules found in many traffic-signal systems is any criterion, it would appear that the importance of clean equipment often is overlooked. When equipment is not kept clean, it is most essential that lamps of relatively high light output be used. This self-evident truth is sometimes ignored. For example, one operator in attempting to justify the use of long-life, low-light-output lamps, says, "due to the lack of facilities to clean traffic signals, the reduction in brightness because of dirty reflectors and lenses is more serious than a reasonable reduction in light output of the lamp."

This reasoning, if pursued to the ultimate, might cause one to arrive at the conclusion that lenses and reflectors could reach a point in depreciation where little or no light would be required from the lamp.

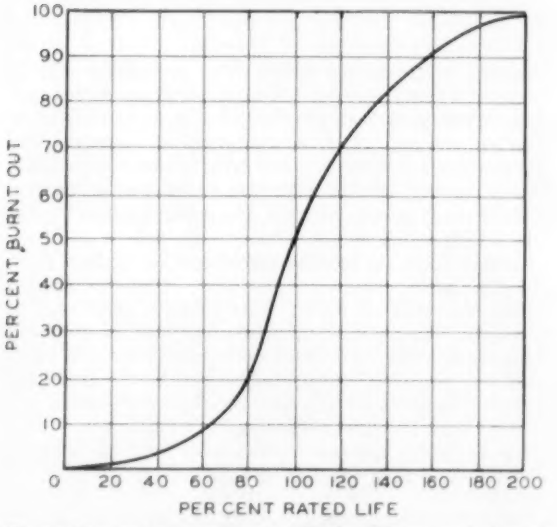


Fig. 3—Burnout expectancy of traffic-signal lamps as indicated by laboratory tests. Note the rapid increase in *rate* of burnout after 20% of the lamps in a given group have failed.

Clean Lenses When Lamp Replaced

It should be obvious that the less frequent the cleaning of equipment, the greater the need for light produced by the lamp. On the other hand, a well-maintained signal can justify the use of less generated light. These facts emphasize the importance of a regular cleaning schedule. Usually the cost of cleaning is minimum when done at the time of lamp replacement. It is more realistic to group replace at a time determined on the basis of per cent of total lamps burned out rather than at some predetermined calendar period (Fig. 3).

Observation of present-day traffic signals indicates that many are not of sufficient brightness to adequately compete with the neon sign or the setting sun, and that the tendency to use long-life lamps to the detriment of light output is to be deplored. The facts here set forth should be helpful to those having the important responsibility of safeguarding life and property through that most important medium—the traffic signal.

Trolley Coaches in Three New Zealand Cities

SQUEEZED into the narrow coastal plain between ocean and volcanic hills, the streets in the center of most cities in New Zealand are congested with traffic, while the suburbs, lightly populated, stretch far out over the ridges and valleys of the hills.

In ***Wellington***, the capital city with 217,800 persons, 36 trolley coaches are in operation, according to Ohio Brass *Traction News* for March 1955.

In ***Dunedin***, which is on South Island and has a population of 97,900, 34 trolley coaches have replaced electric streetcars on four routes and cable cars on one route. It is anticipated that by 1956 another 45 trolley coaches will be in service on the 13 miles of flat routes and 15 miles of hill routes.

Auckland, on North Island, covers 72 square miles and has a population of over 350,500. The congestion at the city's center, the extremely low average population density, the volcanic hills (400 feet to 600 feet high) converging on the city from three sides, and the 75,000 private automobiles registered in the metropolitan area pose a special transportation problem. The Auckland Transport Board owns 59 trolley coaches for the basic timetable operation, while diesels are used for the extra peak hour traffic and to provide express services to the outer areas. Trolley coaches are said to be written off over a period of 20 years, while diesel and gasoline buses are written off over a period of 15 years and 8 years, respectively.

Vacuators play an important role in Durham's rehabilitated sewage-treatment plants; this one is at the New Hope plant.

Durham Updates Its Treatment Plants

DURHAM, N. C., has three sewage-treatment plants, one of which is over 40 years old. When the present rehabilitation program is complete, all three will be operating with youthful vigor, spurred by the imaginative and resourceful use of the latest treatment equipment that the sanitary engineering profession has to offer.

Durham's oldest plant, the Third Fork, first went into operation in 1912, providing primary treatment. Sixteen years later, the city added more primary sedimentation tanks and fixed-nozzle trickling filters fed by a dosing tank that receives the primary effluent. Sludge from the primary tank first went to unheated digestion tanks, and then to open drying beds for disposal.

Third Fork Rehabilitation

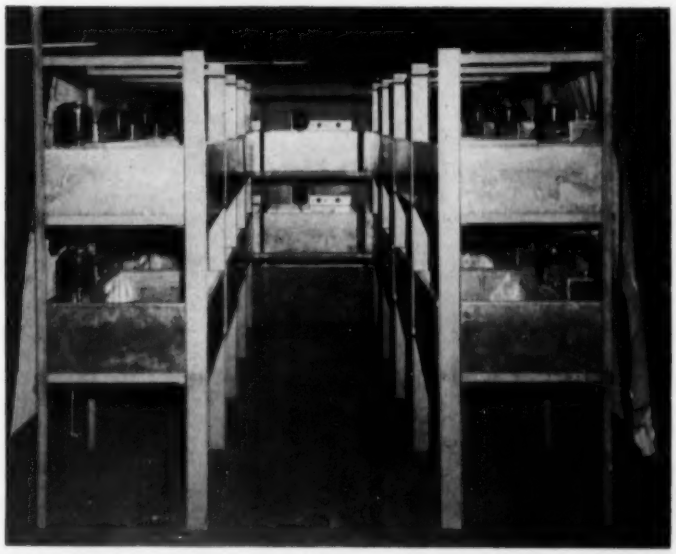
The refitting program substitutes a Dorrco Vacuator for primary settling. It also incorporates twin high-rate trickling filters fed by rotary distributors, followed by five new rectangular settling tanks equipped with straight-line collectors. The effluent will flow back to the pumping station where a portion will recirculate through the high-rate filters. The remainder will be pumped to the old, fixed-nozzle, trickling filters and thence will flow through the settling tanks to the receiving stream. This combination of high-rate and standard-rate trickling filters will provide exceptional purity to the effluent that the plant will discharge. During rainy or cold weather, the operators may bypass the standard-rate filters.

Sludge from all settling tanks and skimmings from the Vacuator will go to two new covered digestion tanks, operated in series. The primary tank will be heated and the secondary, unheated. The old unheated tanks will remain in service as storage units. The plant also will have additional drying-bed area. Digestion gas will be collected in a new pressure gas holder, and will be used for power, heating, and digester-gas recirculation. The enlarged plant will have a nominal capacity of 5 mgd (million gallons daily).

New Hope Creek Plant

Next oldest is the New Hope Creek plant, which was built in 1927 when nearby Duke University came into

Three plants, operating since 1912, 1927, *and* 1935, *respectively, are refitted with up-to-the-minute equipment to provide the most recent methods of sewage treatment*



This multiple bath incubator facilitates the investigation and control of industrial wastes. It is said to be the largest of its kind in the world.

being. This plant serves the university and the southwest section of the city.

The original plant used a single Imhoff tank to provide primary treatment only. However, in 1933, secondary treatment became necessary. The city supplied this by adding another Imhoff tank together with dosing tank and fixed-nozzle, standard-rate filters. These were followed by final settling tanks of the Dortmund type with no sludge-collection mechanism.

Last year, the city completed enlargements for the plant, giving it a capacity of 2 mgd. The new additions include Chain Belt automatically cleaned screens, a single Vacuator that discharges by gravity to the existing Imhoff tanks which, in turn, discharge to the fixed-nozzle filters. No additional final settling was provided and no pumping is required. The city did provide a covered, heated 40,000-cubic-foot sludge-digestion tank and a 5,000-cubic-foot gas holder, fabricated by the R. D. Cole Company. Gas provides fuel both for the PFT digestion tank heater and for space heaters that warm the buildings. The enlarged plant also has approximately 25,000 square feet of new sludge-drying beds.

The Vacuator has proved successful. It has been particularly useful in removing grease that has been a problem.

Northside Plant

The Northside plant went into operation in 1935, and was built under the old PWA program. It is based on a conventional activated-sludge design, consisting of six primary settling tanks, aeration tanks, and final settling tanks, each designed for a nominal flow of 1 mgd. The original installation included three 60,000-cubic-foot digestion tanks, covered and heated; and approximately 25,000 square feet of sludge-drying beds, 10,000 square feet of which were covered with a corrugated glass roof on structural steel trusses. This is one of the early plants powered by gas. The original engines, 150-hp Cooper-Bessemers that operate at 360 rpm, still give service that is satisfactory.

In the new program, these engines will be moved, reinstalled, and connected directly to Roots-Connersville blowers. The new work, now approaching completion, includes a new screen house with Chain Belt screening equipment, and twin Vacuators.

The effluent will be pumped to two new high-rate or roughing filters, fed through Dorrco rotary distributors. The normal effluent from the filters will discharge to the existing settling tanks which are supplemented by three new units. Liquor for recirculation will be drawn from the settling-tank effluent and transferred back to the pumping station.

Aeration and Settling

Three additional units of aeration tanks and final settling tanks, similar in all respects to the original, are being provided under this contract. Normal effluent from the settling tanks following the filters will be discharged through the aeration tanks and final settling tanks, and thence to the receiving stream. The aerators are PFT removable-plate type, located in the center of the tank with aeration plates located on each side.

The plant will have one new heated and covered sludge-digestion tank. The new digester will be similar to the original units, except that it will be heated by a PFT heat exchanger rather than hot water coils.

Included in the Northside program is a new central control building that will house the sewage pumps and certain other equipment. This building also will house a new laboratory and office space. One of the structure's novel features is a multiple water-bath BOD incubator room, which is being constructed for this particular plant by Phipps & Bird, of Richmond, Va. Its capacity of approximately 1,000 bottles is needed in the investigation and control of industrial wastes. This is probably the largest such installation in the world.

The design and supervision of construction for all three plants has been the responsibility of Piatt and Davis, consulting engineers, Durham, N. C.

Melvin V. Lubman (left), principal personnel administrator, and John E. Damerel, Director of Personnel, display some material used in Richmond's safety program.

Richmond, Va., uses varied techniques to prevent accidents involving city personnel and to make all city employees safety conscious

Safety Program Reduces Lost Time by 62%

By JOHN E. DAMEREL
Director of Personnel
Richmond, Va.

THE City of Richmond, through its formal safety program, has reduced lost-time accidents by 62% since 1951. The program began on a trial basis in the Bureau of Operations in the Department of Public Works and now includes the entire Works Department, as well as Recreation and Parks, Utilities, and the Divisions of Automotive Maintenance and Buildings Management. After a year of experience, the Bureau of Operations alone reduced the number of lost-time accidents from 71 to 14.

The organization for the city's safety program is simple. Coordination of safety activities is centered in the Department of Personnel where one staff member is responsible for promoting interest in safety, providing assistance to the operating departments in the administration of their individual programs and is, in general, concerned with those safety matters that involve the city service as a whole.

Each of the above agencies, where

(Left) A portable screen, suggested by a Garage employee, protects Garage personnel from eye injury while welding is in process. (Right) George Cheadle, Joseph Garrett, Louis Washer, Jr., Robert S. Hopson, and E. L. Clements observe

"Junior," a model used to demonstrate the correct method of lifting bulky objects. Members of the Safety Steering Committee of the Department of Public Works, these men meet to review experience and to set safety policy.

the most hazardous occupations and conditions exist, has two types of safety committees. One is made up of departmental employees and lower echelon supervisory personnel, and the other is composed of the top management of the department. The employee committee is responsible for investigating accidents and reporting lost-time injuries with recommendations for prevention to the departmental steering committee. The steering committee in turn consolidates these injury reports by major classification to determine the nature and extent of the accident problem. Both committees conduct preventive inspections so that deficiencies can be corrected before accidents occur.

Safety Is Every Man's Job

The key to the success of the program is the fact that safety has become an integral part of each man's job and not merely something else for the supervisor to contend with. For example, "A Good Mechanic Is a Safe Mechanic" and "The Safe Way Is the Best Way" are well-publicized slogans in the Division of Automotive Maintenance, which operates the City Garage. In 1952, when the safety program was first installed, lost-time accidents had been occurring about once a month. At the present time, the Division is entering its third year without a single lost-time accident. They even have a small dog house and if anyone has an accident or violates an established safety rule, a miniature dog with the employee's name on it is placed in the dog house for a specific period of time. If the man offers a good safety suggestion, he may be "pardoned" by the Safety Committee before the expiration of his sentence.

The Division of Trees in the Department of Recreation and Parks has completed almost two years without a lost-time accident. The men have been instructed thoroughly in their jobs and use safety devices at all times. In the Department of Public Utilities, lost-time accidents have been reduced from 47 in 1952 when the safety program began in this Department to 16 in 1954. Days lost due to injuries declined to 162 in 1954 from 970 in 1952.

Safety Lectures and Films Used

Outside experts in the various fields of safety are called upon frequently to discuss and illustrate good practices in such areas as driver safety and materials handling. Films from the National Safety Council, the Virginia State Department of Labor and Industry, the Richmond Area Safety Council, insurance and equipment companies are also used. Most supervisors in hazardous work have taken first-aid classes which are conducted by the Bureau of Fire.

A trip to the dog house is the sentence for lack of safety consciousness in the Garage. T. L. Sharpe and H. D. Kidd show "sentencing."

In addition to specific departmental safety activities, there is a Fleet Safety program headed by a special Automotive Accident Review Committee. This committee meets each week to review all automobile cases involving city equipment and makes recommendations in accordance with the evidence submitted. A subcommittee is working out a policy for rewarding drivers with outstanding safety records. The Committee has referred 31 people to the Department of Personnel since September 1, 1954 for testing on the driver diagnostic equipment, which is designed to determine driving deficiencies and suggest remedial measures. Fifty-eight other employees have taken the test on a voluntary basis.

Richmond's safety program has resulted in the installation of numerous safety devices, the development of safety consciousness on the part of employees and a decrease in the number of lost-time accidents. An important by-product has been a definite increase in job efficiency.

Migrant Rats and Unsightly Walls

SLUM clearance and redevelopment brings with it some unexpected problems, according to the National Association of Housing and Redevelopment Officials. Among these are the rats who settle uninvited in new locations when their old residences are torn down, and the unsightly patterns of bricks, plaster, and stairway outlines left on party walls of buildings adjacent to the demolished structures.

The trouble with the latter problem is that often no one is obligated to clean up. The owner of the building with the unsightly wall is not legally responsible when the offending part of the wall projects past his property line. Nor do city officials have the authority to act as long as the condition is not hazardous. An appeal to civic mindedness has proved effective in the Georgetown section of Washington, D. C., where a volunteer committee of architects has been suggesting to owners how they can improve the looks of such walls.

The rat problem can be solved if the redevelopment agencies notify health officials promptly after human residents have vacated. The exterminators can then move in before rats decide to seek other quarters.

After the subsoil was scarified (see below), the 94-pound bags of cement were distributed in quantities that would provide an 8% cement content required for the test.

New streets meet peak summer traffic loads and rigorous winter conditions

Helena Uses First Soil Cement in Montana

By HENRY ROLFES, JR.
City Manager
Helena, Mont.

HELENA has thrived on the colorful heritage left by its earliest settlers, the gold prospectors who struck pay dirt here in the middle 1860's and named the camp Last Chance Gulch. Legend has it that even after the mining camp grew to a respectably sized town and wished to change its name to assume a properly staid mien, the character of the old settlers was reflected in the choice of the new name. It is said that the city was renamed Helena because of the suggestion of profanity in the first syllable.

Despite the power of suggestion in its new name, Helena's progress earned it the distinction of becoming the capital city of Montana. Neither has the suggestion dissuaded summer autoists who have made the city the base for northern vacation routes.

The city government has always taken seriously its responsibility to progress. And despite the rigorous climate, during which temperatures occasionally dive as low as minus 30° and make street maintenance difficult, we have been determined to sustain our progress by making the city attractive to the flood of automobile-driving visitors.

Among other things, this means providing smooth-riding, comfortable street surfaces. We were determined not to let ourselves be discouraged in this accomplishment by the hindrances of old worn-out streets, limited finances, and difficult climatic conditions.

The first step was to scarify and grade the subsoil to a depth of 6 inches.

Soil Cement Chosen

Instead, after the city's director of public service, Jack Barnes, the district manager of the Portland Cement Association, and I conferred at length, we resolved to strike out in a new direction and construct a section of soil-cement pavement. None of the operating personnel had had any experience with this paving material and technique so that we felt it was truly a pioneering venture.

Our test section was a secondary

came better acquainted with the good condition, although a little rav-

Bituminous seal with sand cover.. 242.45

business street, just two blocks from the principal downtown artery, that carries a heavy volume of mixed vehicular traffic. The section is 767 feet in length and covers 2,720 square yards. In past years, it had required extensive maintenance because of poor drainage; the existing surface was of granular material. Soil samples, submitted to the Montana Highway Testing Laboratory, indicated that 8% cement would be required for adequate hardening.

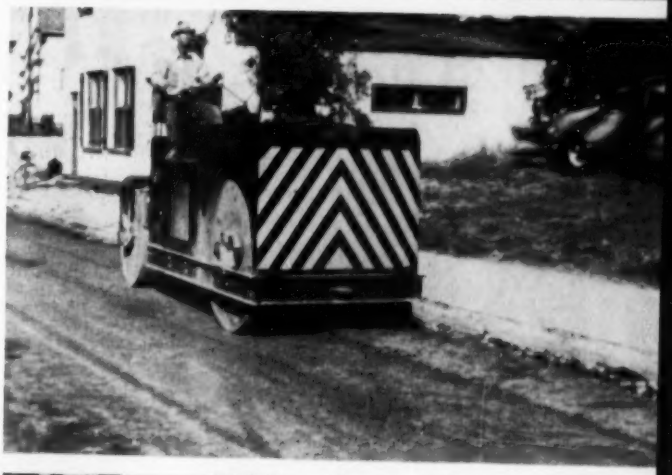
The Street Division of the Public Service Department began the project before one of the most technically qualified audiences ever gathered for such a purpose. Representatives of the State Highway Department, contractors, and personnel of other cities were present, as well as a number of rather puzzled Helena citizens. The Portland Cement Association and the Seaman Company provided invaluable assistance both in getting the job started properly and in guiding the progress of the project to its conclusion. All of the work was performed by city forces and with city-owned equipment, so that equipment rental or supplementary manpower was not necessary.

On September 21, 1954, we began scarifying to a depth of 6 inches with an Adams Model 512 motor grader. The next day, 94-pound sacks of cement were distributed over one linear block in proportions set by the 8% requirement. The sacks were then cut and the contents dumped.

An improvised drag, towed by a Toro power unit, was used to distribute the cement as evenly as possible over the area. A Seaman Pulvi-Mixer, pulled by a Huber Maintainer, was then employed to do the in-place mixing. The scarified material contained many rocks and, after each pass, large rocks had to be removed manually. Considerable dry mixing was done to insure proper dispersal of the cement. Then water—its quantity gauged by hand molding—was applied with a street flusher.

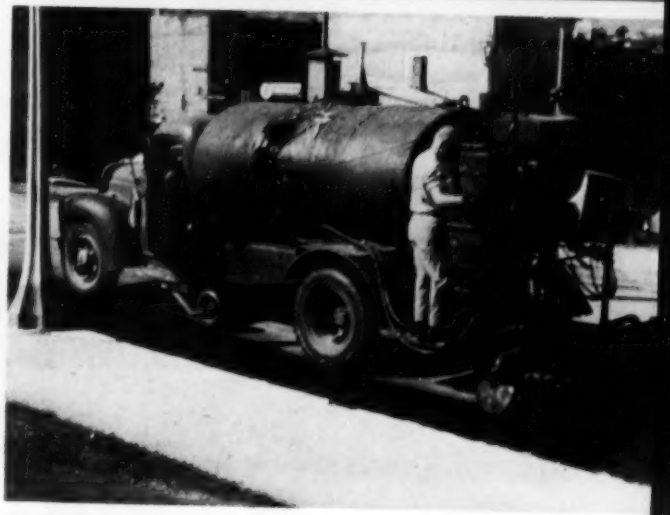
Prior to final mixing with the Pulvi-Mixer, the motor grader spread the material back against the curb. The mixing then continued and, upon completion, the entire area was compacted with a Buffalo-Springfield 10-ton tandem roller. It should be noted that some difficulty was encountered by the adherence of wet surface material to the roller wheels. After one pass with the steel roller, a W.E. Grade 10-wheel pneumatic roller, pulled by the Toro, was used. On the day following, the same procedure was followed on the balance of the project. Operations proceeded much more efficiently as the personnel be-

Soil cement and water are blended in a base.



A steel-tired self-propelled roller follows.

Then a rubber-tired unit rolls a new base.



A layer of asphalt and chips completes job.

Specifying Long Life Traffic Controllers

came better acquainted with the methods.

After the soil-cement course was completed, we applied ¼ gallon per square yard of RS-2 emulsified asphalt, using a Littleford distributor. Then we spread 20 pounds per square yard of sand with a Galion Chip Spreader. Two weeks later, the sand was cleaned from the surface and an application of ¼ gallon per square yard of RS-2 emulsified asphalt covered with 25 pounds per square yard of ⅜-inch stone chips was made.

To date, the street section is in good condition, although a little raveling has occurred in areas where the wet material was picked up on the steel wheels of the tandem rolling equipment.

Cost of Project

The approximate cost of the project, exclusive of equipment charges, was 86 cents per square yard. A breakdown reveals the following expenses:

Labor	$ 550.00
Cement	1,298.00
Bituminous seal with sand cover	242.45
Bituminous seal with chip cover	252.75

After this experimental job, we believe that we can reduce the cost through more efficient operation. We are convinced that this method of stabilization has a definite place in our street-improvement programs and we are anticipating further use of soil cement in the near future.

W. J. Leary, director of public service, and Thomas Craver, superintendent of streets and sanitation, were in charge of the project.

Chicago's Water Works "Totem Pole"

The story behind the front cover

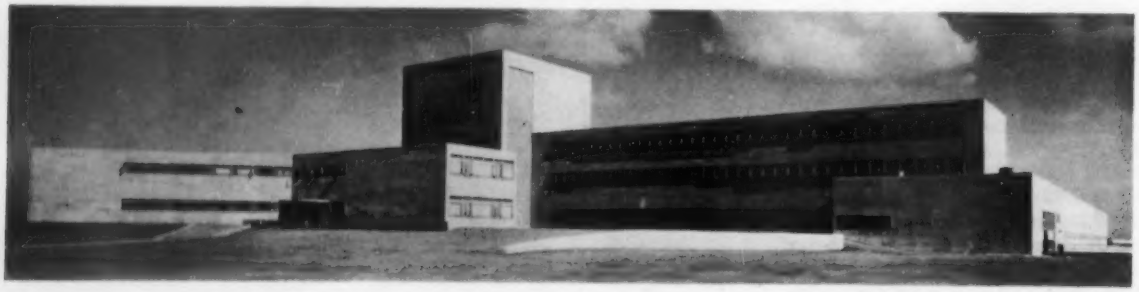
CHICAGO, host to America's waterworks engineers, operators, chemists, and equipment manufacturers at this year's American Water Works Association meeting, has the unusual distinction of being not only the home of the largest water-filtration plant in the world, but the site of the only water-works "totem pole."

Visitors at the big South District filtration plant will find a sculptural piece at the southeast corner of the low-lift pumping-building screen room. Its front facings depict three figures, each representing a different stage of water treatment. The bottom represents a mechanic turning a valve on a pipeline. The center is a chemist with a test tube and beaker. The top is the scientist holding a book. In this way, the sculptor, Abbot Pattison, symbolizes the mechanical, chemical, and mathematical research phases required in water filtration.

The rear face of the piece depicts flowing water in semiabstract form, in contrast to the simple pattern of the window behind. The base symbolizes the flow of water beneath an aqueduct, illustrating man's earliest efforts to control the flow of water along some calculated path to bring areas not served effectively by nature within the dominance of man. The best view of the piece is either close up, for each face, or from the south steps where it may be studied as a whole, with the broad sweep of the screen-room windows behind culminating in the sculptural climax of the vertical shaft.

The South District filtration plant, located at the foot of 79th Street on the lake shore, went into service in 1947. It was built because the lake water supplied through the south intakes is exposed to pollution by the concentrated heavy industries along the southern shore of Lake Michigan. The new Central filtration plant, now under construction north of the Navy Pier, will supply the remainder of Chicago and its suburbs. While the South District plant now holds the record for being the world's largest, the new Central plant will be three times larger.

(Above) Chicago's Commissioner of Water and Sewers James W. Jardine (right), and Deputy Commissioner and Chief Engineer W. W. DeBerard view the "totem pole." (Below) The main entrance to Chicago's South District Filtration Plant, which is currently the largest of its kind in the world.



Specifying Long-Life Traffic Controllers

By LIONEL M. RODGERS
Chairman
Citizens' Committee on Traffic Control
Philadelphia, Pa.

WITH an ever-increasing amount of electronic equipment coming into use in the traffic-control field, the municipality must put increasing emphasis on obtaining long life, trouble-free equipment at the onset if field failures and high maintenance costs with resulting public criticism are to be avoided later.

Something more than the manufacturer's integrity is involved. Even the relatively simple fixed-time traffic controllers were sometimes subject to failure, and none of the manufacturers of traffic equipment can claim never to have marketed an imperfect design.

Evaluating electronic traffic-control equipment is a much stiffer task than evaluating fixed-time equipment. Mechanical inspection is almost meaningless, except perhaps by an electronics specialist. However, the person responsible for the purchase of electronic equipment can take certain steps that safeguard against early failures and high maintenance costs.

First step: *Specify equipment in terms of function and quality only.* The ITE specifications are sound from a standpoint of function, but they do not attempt to specify quality. Additional quality specifications are essential. Only by free competition among manufacturers' products, at specified levels of performance, can the most be obtained for the buying dollar. Unless certain levels of performance are demanded and specified, competition will be on the basis of decreasing quality and cheapest first cost, that is likely to be the price most expensive to the city.

Second step: *Buy from manufacturers of proven conscience, with experience in the traffic-control field.* They have engineers who know that traffic equipment must operate 8,760 hours per year—and function 3,000,000 times during that period. Engineers in most other fields think in terms of 1,000,000 operations being a large number, whereas in traffic control such a number is representative of only a few months of operation.

Third step: *Insist on life test data under field conditions similar to those existing in your community on the equipment being purchased.* If you are in a high humidity climate, or near salt water, or in a location subject to industrial air pollution of certain kinds, you may find it economical to establish particularly tight specifications in order to get, say, an average minimum life of five years (except for tubes) from the components in properly designed electronic equipment.

Traffic Controlling Is Rugged Service

The quality of components alone is not indicative of their life. In general, while only good components will give good life, the best components can give very poor life if improperly used, and the best quality of certain types of component is not good enough for the service involved in traffic controllers.

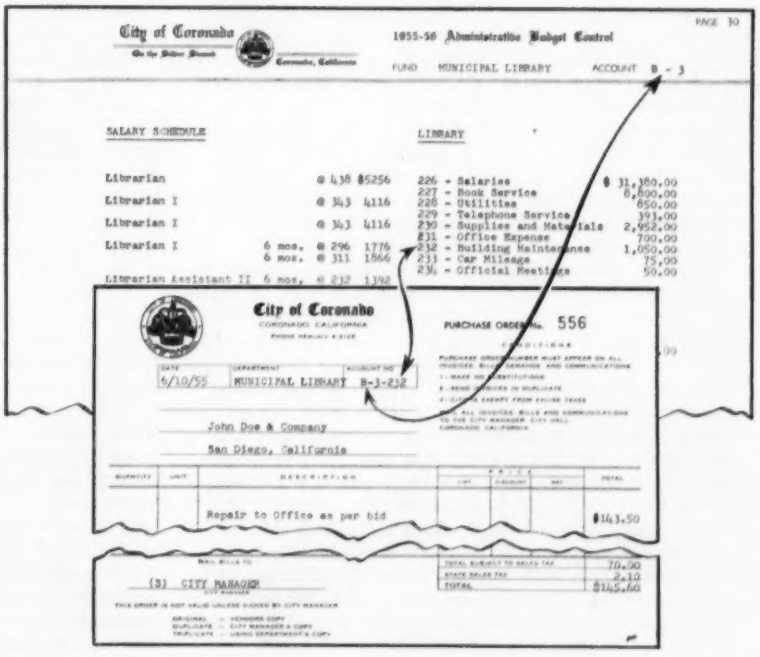
If the three steps outlined above are followed, the equipment obtained should be satisfactory in operation and economical to maintain. If more than a few pieces of equipment are being purchased, the cost of obtaining the services of an electrical engineer versed in the field of traffic control to prepare specifications, supervise tests on sample equipment supplied, and make recommendations on equipment to be purchased, can pay for itself many times over in maintenance savings.

Coronado, Calif., Ties All Purchases To the Budget

OUR budget this year establishes accounts to which all purchase orders must be charged. On each budget sheet there is an account number for the department and the appropriation account numbers. The latter, which give the status of each appropriation, appear also on the encumbrance sheet.

Requisitions are written personally by each department head and are submitted to the city manager's office where a detailed purchase order is made out. The typical budget sheet for the municipal library (illustrated at right), carries the Library Account code B-3 at top right. The Purchase Order carries a corresponding account number B-3 (for library) 232 (account number for building maintenance).

M. W. SLANKARD
City Manager
Coronado, Calif.



City of Coronado
On the Silver Strand
Coronado, California

1955-56 Administrative Budget Control

PAGE 30

FUND MUNICIPAL LIBRARY ACCOUNT B - 3

SALARY SCHEDULE

LIBRARY

Librarian		@ 438	$5256	226 - Salaries	$ 31,380.00
Librarian I		@ 343	4116	227 - Book Service	6,600.00
Librarian I		@ 343	4116	228 - Utilities	850.00
Librarian I		@ 343	4116	229 - Telephone Service	393.00
Librarian I	6 mos.	@ 296	1776	230 - Supplies and Materials	2,952.00
	6 mos.	@ 311	1866	231 - Office Expense	700.00
				232 - Building Maintenance	1,050.00
				233 - Car Mileage	75.00
				234 - Official Meetings	50.00
Librarian Assistant II	6 mos.	@ 232	1392		

City of Coronado
CORONADO, CALIFORNIA
PHONE HEMLOCK 4-3131

PURCHASE ORDER No. 556

CONDITIONS

DATE	DEPARTMENT	ACCOUNT NO
6/10/55	MUNICIPAL LIBRARY	B-3-232

John Doe & Company
San Diego, California

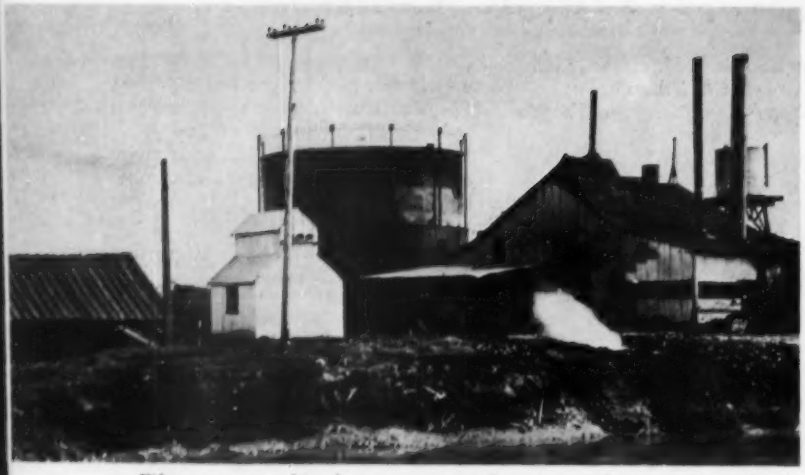
QUANTITY	UNIT	DESCRIPTION	PRICE	TOTAL
		Repair to Office as per bid		$143.50

MAIL BILLS TO
(3) CITY MANAGER

TOTAL SUBJECT TO SALES TAX	70.00
STATE SALES TAX	2.10
TOTAL	$145.60

THIS ORDER IS NOT VALID UNLESS SIGNED BY CITY MANAGER

ORIGINAL — VENDORS COPY
DUPLICATE — CITY MANAGER'S COPY
TRIPLICATE — USING DEPARTMENT'S COPY



Fifty years ago, this plant was one of three to supply gas to Long Beach.

By LEONARD L. BENDINGER

Manager

Municipal Gas Department

Long Beach, Calif.

Municipal Gas—Good for Long Beach

. . . but not necessarily for all cities

MOST cities do not undertake the supply and distribution of gas as a municipal utility. Long Beach, Calif., with its special local conditions, assumed the responsibility of this service because it was convinced that its people would be better served at a lower cost if this service were municipally owned. The city has discharged its duties in this operation for the past 30 years.

Before discussing our operational organization, we should first review briefly our commodity and its production. Manufactured gas is derived from coal, oil, or a combination of both. Because it is more costly to produce, manufactured gas is fighting a losing battle with natural gas. Distribution problems for both are identical. Natural gas is normally a product of oil-field production and, in combination with oil, can be removed from the wells by any number of methods.

Once the gas, whether manufactured or natural, reaches the utility company's system, the service becomes a matter of maintaining continuous and uniform delivery in quantities necessary to meet the demands of consumers. Depending upon the pressures in the feeder mains, the gas that first enters the system is either dispatched to holders for storage until peak demand periods occur, or is dispatched directly through the feeder system for supply to the distribution system. Various pressure regulators govern the entrance of the gas into the system. A metered service connection to the consumer's premises provides for its final use.

Domestic gas service first was introduced to Long Beach in 1900 by a local utility. This company delivered manufactured gas from a small gas works and served homes on approximately 100 city blocks at a charge of $1.90 per 1,000 cubic feet. A second company later set up in competition in this territory. Still later, while Long Beach's population was less than 15,000, a third company was chartered. The keen competition finally resulted in a merger in 1910, and one company served 17,800 residents through 4,600 active meters.

In 1912, this company began using natural gas, mixing it half-and-half with the manufactured product and raising the BTU content from 550 to around 800. In 1915, the utility switched to natural gas alone with a BTU content of 1,100 and this area has enjoyed the use of natural gas ever since.

In 1921, the Signal Hill oil and gas field, at one time the leading source of natural gas in California, came into being. Of its total production, about one-third was being utilized by oil operators for field purposes, or sold to gas companies with facilities for transportation of the product to points of consumption; the balance was wasted to the air.

Municipal Leases

In the early days of oil excitement in Signal Hill, Long Beach, owning several large tracts of land in the heart of the proven areas, leased certain properties for oil and gas development. The city retained its right to all gas produced beyond that required for field purposes.

At that time, the local gas utility was purchasing natural gas for 8 cents per 1,000 cubic feet and selling it to the people of Long Beach for $1. Consequently, many people were convinced that a municipally-owned gas utility could distribute gas at a substantial savings. After much agitation, the city council passed an ordinance calling for a special election in 1923 when the voters approved a $3,000,000 bond issue to acquire the local gas properties.

In the beginning, the city found it difficult to nego-

Today, this modern plant, which is owned by the city, occupies the site.

tiate with the utility. It could not effect a purchase until it started building a competing municipal set of gas mains, offering to sell gas at 50 cents per 1,000 cubic feet. On May 26, Long Beach took over the properties and has been operating them ever since under the supervision of the city council. The water department, in contrast, is governed by a five-man semiautonomous board.

The utility continued to grow, making substantial enlargements in 1927 when $950,000 in new bonds were voted to provide for new storage holders and to install mains in the industrial districts. All other extensions and improvements were paid by earnings. These include the purchase, in 1932, of the North Long Beach system, which is composed of about 60 miles of mains and 4,000 customers; the construction of the utilities building and its enlargement in 1939, a general stores warehouse in 1940, a liquid petroleum gas standby plant in 1941, a 5,000,000-cubic-foot holder and compressor station, four 500,000-cubic-foot high-pressure holders, and a new compressor station at our No. 1 plant in 1946; a 14-inch transmission line and numerous other small additions and improvements which, plus the improvements to the gas distribution system, represent an investment in gas properties of $14,392,961, as of 1953-54. Added to this, and of major note, is the $36,190,867 that has been transferred to the city's general fund.

Maintaining Sufficient Supply

The furnishing of adequate supplies of natural gas in excess of peak demand days is our dominant problem. As previously mentioned, the department had ample supplies of gas from city-owned lands at the time of assuming the operation. However, this supply soon proved inadequate for peak demands. Since the private companies owned the underlying contracts for most of the other gas produced in the Signal Hill field, the city had to seek additional supplies elsewhere.

The first mains to new fields date from 1925. Additional sources also were tapped in 1935 and 1938. From then until 1952, practically all our gas came from the Wilmington-Long Beach Harbor Field with our royalty reaching as high as 72,000,000 cubic feet per day in 1951.

Need for a New Source of Supply

But as is so often true of fields developed too rapidly, this supply soon was depleted and, during the winter of 1951-52, we were searching for a new outside source. In June 1952, the city invited bids for furnishing gas and received a proposal from the Signal Oil and Gas Company for gas to be delivered from its facilities in Huntington Beach, Calif. A pipeline was rapidly constructed during the early winter months and, in February 1953, the city was receiving gas from this source.

During the spring of 1953, a repressuring program was begun by the Harbor Department as an aid to increased oil recovery in the local field. The department hopes that this program not only will increase oil delivery but will also serve as an underground reservoir for the department's future gas supply.

The history of Long Beach's municipal gas department has been interesting. In our particular case, where the supplies were close and local conditions permitted them to be developed easily, gas service has been profitable to the city and a thrifty investment to the public. Past experience promises that it will continue to do so.

Good city Public Relations All year!

The City Tells Its Story

Municipal Public Relations

Edited by PAN DODD WHEELER
Executive Director, Government Public Relations Association

Four Key PR Officials Suggest Ways to Closer Relations Between Cities and Citizens

PUBLIC relations is the big job of the future so far as city government is concerned.

. . . a public relations program cannot do anything about bad administration. We must first do good and then we can tell a good story.

You haven't got 100% public relations unless you have oriented municipal information to electronic journalism—radio and television.

We think the broad effect of public relations is to create a friendly atmosphere in which the government can carry on its program without having to fight for it at every step.

These are the mid-year messages from four people, each with a different approach to MPR. They are the mayor of a big city—Quigg Newton of Denver; a public relations director for a bi-state agency serving 200 cities—Mrs. Lee Jaffe of the Port of New York Authority; a public affairs director for a national TV and radio network—Elmer Lower of the Columbia Broadcasting System; and a public relations counselor whose clients include school districts and town governments—William Kennedy of Kennedy Associates, Rockville Centre, N. Y.

Though these four view municipal public relations from different vantage points, they agree on certain MPR basics: city officials must be dedicated to the fact that they need the people in government; the mass media—newspapers, radio stations, and TV—can and will assist city officials in communicating with citizens about government; and municipal officials need professional help to utilize these media and others available to them. Individually, here is what the four MPR officials have to say.

The Mayor's Viewpoint:—Quigg Newton

The whole field of public relations is an unexplored one so far as city government is concerned. Very few of our cities have employed trained PR specialists. Comparatively small amounts of money are being appropriated by our city councils for this purpose. And, there is too little acceptance and understanding on the part of the public of "public relations." Many people regard public relations as a sort of newfangled device for city officials to perpetuate themselves in power—a political propaganda enterprise.

I feel, however, that public relations, so far as city government is concerned, is the big job of the future. City officials must give thoughtful attention to MPR as time goes on. I believe that eventually we will gain citizen acceptance that public relations is an integral part of our democratic system and of good government itself.

Public relations is our effort to obtain and to keep the interest, support, and participation of the people in our respective government programs. Without this, we who are city officials cannot achieve our programs and, so, fail in our responsibilities as city officials. And our cities suffer, for they will fall behind other cities in today's hectic competition to attract new business and to keep what we have. Public relations is vital to the future of our cities.

I can illustrate this from my own experience recently where a project failed, I believe, for lack of public relations organization in Denver. Because Denver is a commercial distribution center for a wide area, our future depends on construction of new arteries into and out of the city. Not long ago, my administration proposed a bond issue to finance such construction . . . but the bond issue was disapproved in a referendum. I told people about the urgency of the matter. But, either I didn't tell it soon enough or skillfully enough to convince people to vote for the bond issue. A good public relations program, functioning in a routine but expert way, could have created a climate of understanding for the bond issue approval.

PR—An Approach to the Independent Voters

In my opinion, public relations is an approach to the independent voters—a democratic substitute for the undemocratic, old-type machine politics that used to exist in our cities. MPR, as I see it, is based on the foundations of good government: a belief that people can make right decisions if they have facts; that government should not have secrets from people except where security is involved; and that the press should have full access to what is going on within government.

The PR Officer Speaks:—Mrs. Lee Jaffe

While I am not a public relations director for a municipality, my work—helping the 13,000,000 people in the 200 municipalities serviced by the Port of New York Authority appreciate what it is trying to do in the metropolitan community of New York and New Jersey—presents similar problems to those of officials in individual communities.

I think that perhaps the most important thing about Port Authority public relations is that our 12 commissioners, our executive director, and our line department heads feel very strongly that no administrative job can be done correctly unless it has public accep-

tance. It is a rule with the Port Authority that we do not proceed with any major construction until after we have had the fullest discussion with representatives of the citizenry of the Port district.

The importance of public relations is officially recognized, and its director has "cabinet stature" with a voice in administration like that of other department heads. It was said by one of our founders that the Port Authority is a three-legged stool. One leg is finance, the other is engineering, and the third—without which the stool cannot stand—is public relations.

We proceed on the theory that the director of public relations cannot hide bad administration. So, the Port Authority must first do good, and then we can tell a good story. We like alert reporters, and we operate knowing that all we do is open to public scrutiny. In the past 10 years, we have had about 2,500 favorable editorials in the sophisticated press of the metropolitan area. We have prepared—and have used—some 2,000 news stories, on which there have been follow ups in the hundreds of thousands. We live in a goldfish bowl and are proud of it.

It is a fact, that in government at all levels, some fine programs fail because there is insufficient preparation for public acceptance or because the story is not told in a way that people will understand. This means that a good public relations program is one of the most important instruments of democracy today.

The Broadcaster Suggests:—Elmer Lower

If there is any message I have for you it is this: you haven't got 100% public relations unless you have oriented your information program to electronic journalism, radio, and television. You are missing out if you are thinking only of the printed page.

I am not deprecating the influence of newspapers, where I started out 22 years ago as a city hall reporter. I say simply that radio and now television have revolutionized the information business in the past quarter of a century.

There are 111,000,000 radios in the United States tuned to 2,634 stations. During the course of a day, the average radio station reaches two out of every three adult people in the community. Some hundred and fifteen million hours are spent daily listening to the radio. Of these, 66% say they listen to radio, specifically for "information features."

There are 32,000,000 television families tuned to about 394 TV stations. Both the number of families with TV sets and the number of TV stations are growing rapidly. Our surveyors show that the average family watches TV about five hours per day—a longer period than the family devotes to any other leisure activity.

Information features on TV and radio have attracted considerable audiences. Fifty-one million people witnessed the coronation of Queen Elizabeth via TV, and 45,000,000 watched Eisenhower's inauguration. Ed Murrow's "See It Now" has a weekly audience of 3,500,000. The nightly network news program on CBS-TV and NBC-TV have audiences of about three and six million, respectively. I cite these figures to indicate that radio and TV do reach people—your people. Directors of your local radio and TV stations can tell even more convincing stories of the audience in your area. Broadcasters are interested in good public service programs. If your city is not doing so now, I suggest that you begin to utilize radio and TV to tap this vast audience.

As city officials, here's what you can do to get the full cooperation of radio and TV people. First of all, take them into your confidence. Tell them what you are doing and why. Remember that radio and TV are effective because they can present actual voices, actual sights. You are not utilizing these media if your cooperation involves handing out the story you believe makes good reading in the newspaper! So, give broadcasters advance notice of municipal events so that they may set up microphones, tape recorders, or cameras in advance.

Mayors and managers can encourage city officers all down the line to cooperate. Broadcasters handle crime, for example, with considerable restraint in any event. But, cooperation from police, fire, and hospital authorities enables broadcasters to cover such stories with greater accuracy and effectiveness than would otherwise be possible. The same is true for other units of city government. Finally, let me repeat—if you are not using radio and TV to benefit your aims for your city, then you are not getting full mileage out of the public relations media at hand.

PHOTO COURTESY OF *The Evening Bulletin*, PHILADELPHIA

CBS official Elmer Lower, PR counselor William Kennedy, "City Tells" editor Pan Wheeler, PR director Lee Jaffe, and Denver Mayor Quigg Newton shown at last year's American Municipal Association Congress where they made talks capsuled on these pages.

PR Counselor for the Smaller City:—William Kennedy

My firm, Kennedy Associates, represents a dozen towns and school districts with populations from 12,000 to 25,000 people. We do not handle communities that require promotion of a particular economy—for example, the Miami Beach promotion of the tourist trade. We operate in residential communities, and our purpose is to create a better understanding between the government of the communities and the people living in them.

We assume that the government is trying to do a good job and is honest. We try to interpret that job to the citizens. By putting ourselves in the shoes of the citizen, we are able to be a liaison between citizen and city official.

The long-range effect of public relations is creation of a friendly atmosphere in which the government can carry on a program without having to fight for it at every step. We think that a public relations firm should

(Continued on page 225)

Six cities from coast to coast take advantage of fast-settling floc developed by iron salts

The new water-treatment plant at Austin, Texas, finds that, when it is necessary to combine softening with coagulation, iron salts give best results.

Iron Salts and Water Coagulation

IRON salts, either as ferrous or ferric sulphate, have a reputation for settling faster than aluminum sulphate or alum. However, the floc formed is generally not so large and, consequently, does not trap so much sediment as alum. This fast-settling characteristic, over a wide pH range, is proving to be particularly useful in the treatment of water when combined with softening, or in coagulation where a large amount of sediment must be removed.

Corpus Christi, Texas

Corpus Christi, Texas, is building a new water-filter plant rated at 48 mgd (million gallons daily). Atlee M. Cunningham, general superintendent, expects to capitalize on this fast-settling feature by providing a relatively short retention period in the settling basins. Omega loss-in-weight feeders will apply the iron salts—probably ferric sulphate purchased from the Tennessee Corporation. Dosages will vary from 0.5 to 2.0 grains per gallon.

Austin, Texas

Austin, Texas, is another city that has enjoyed good results from the iron salts. A. H. Ulrich, superintendent of water and sewage works, uses ferrous sulphate chiefly, although the plant is able to use ferric sulphate as well. Treatment consists of lime softening, disinfection with chloramines, coagulation, settling, and filtering. The iron salts have achieved particularly good results when combined with lime softening and coagulation.

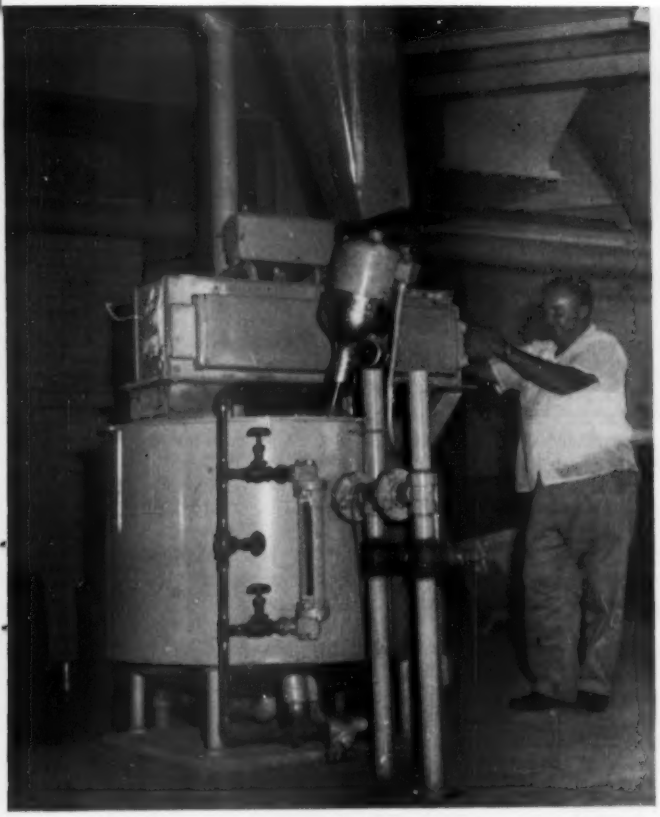
In one of the Austin plants, Mr. Ulrich uses an old model Infilco volumetric feeder, an Omega volumetric feeder, and a more recent model Wallace & Tiernan gravimetric feeder. In another of these plants, he has installed two Wallace & Tiernan gravimetric feeders. All are equipped with vibrators to permit the feeding of pulverized ferrous sulphate which costs less than the granular product. All feeders are in good operating condition and are doing a good job. Dosages vary from 4 ppm to 6 ppm, or the equivalent of 30 to 50 pounds per 1,000,000 gallons.

San Diego, Calif.

San Diego, Calif., combines the fast settling of the iron salts with the toughness of activated silica to produce a highly efficient coagulating compound. The iron salts have proved superior because of their better coagulating characteristics in San Diego water with its high pH range. The plant currently has to operate at 27% of rated capacity during periods of peak demand. Nevertheless, coagulation is so efficient that filters are able to run from 50 to 70 hours between washings.

Dosage averages 6 ppm, or 50 pounds per 1,000,000 gallons. The dosage of sodium silicate (28% SiO_2) is 100 pounds per 1,000,000 gallons, or 3.36 ppm. The combination not only produces a superior floc but also permits the ferric sulphate to act as a neutralizing agent for the activated silica by making use of the sulphuric acid resulting from its hydrolysis. The presence of the trivalent iron ion produces an added advantage that greatly aids coagulation. In the San Diego plant, the sodium silicate is over-neutralized and the gel point is approached from the acid side. This is contrary to practice elsewhere, where the silica is activated by partial neutralization, with the gel point approached from the alkaline side.

Paul Beerman, director of water, reports that his technicians have developed a continuous process to produce this result. The ferric sulphate is purchased from Stauffer Chemical Company, of Los Angeles, Calif. An Omega belt-type gravimetric feeder with a stainless steel mechanical mixer in the dissolving tanks feeds



One of two new gravimetric feeders in the new Austin plant.

The ferrous sulphate scale in St. Louis' Howard Bend Plant.

the chemical. The fineness of the chemical caused problems of arching in the storage bin. Mr. Beerman expects to overcome this by the use of pelletized material. Pumping the solution from the plant basement to the main floor caused difficulties, also, because of the abrasive insoluble material present. This was solved by using an air-piston pump.

Don Hoffman has charge of San Diego's Water Control and Research Division. Roy E. Dodson has charge of filter-plant operation.

St. Louis, Mo.

St. Louis, Mo., has found iron salts valuable in clarifying some of the most turbid water in the country. However, August V. Graf, chief chemical engineer, uses a mixture of ferrous sulphate and alum in both primary and secondary coagulation. This mixture has proved much more effective than either ferrous sulphate or alum alone.

For primary coagulation, equal amounts of the chemicals in solution are mixed and then added to the water. The mixing of the solutions before adding to the water is important. For secondary treatment, two parts of alum to one of ferrous sulphate are used. With low river-water turbidities, it is sometimes possible to omit the use of a coagulant for primary coagulation and to rely upon the softening effect of the lime to entrain and remove suspended matter.

St. Louis obtains its ferrous sulphate from any of the following suppliers: American Steel and Wire Company, Joliet, Ill.; National Lead Company, Sayreville, N. J.; American Cyanamide Company, Tyre River, Va.

The ferrous sulphate is weighed on Richardson scales and is delivered on a belt every one, two, or four minutes. The chemical drops into a 400-gallon tank of water; the overflow from the tank is delivered to the points of application.

Since ferrous sulphate cakes while stored in bins, it is only stored in sufficient quantities to ensure a continuous supply. The chemical is rarely free flowing and, frequently men have to enter the bins to coax the chemical into the passageway leading to the scale.

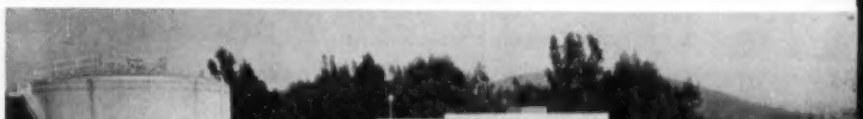
During the past year, the quantity of ferrous sulphate St. Louis has used for primary coagulation ranged from a maximum of 0.75 grains per gallon to a minimum of 0.125; the average was 0.211. For secondary coagulation, the maximum was 0.375; the minimum 0.188; and the average, 0.243. The maximum, minimum, and average quantities of aluminum sulphate added for primary coagulation were 0.750; 0.063; and 0.197 grains per gallon respectively. For secondary coagulation, the figures were 1.500, 0.250, and 0.491.

Providence, R. I.

Providence, R. I., has used iron salts to remove iron and manganese since 1931. Because of "red water" complaints, technicians first tried copperas and lime, but later substituted ferric iron salts for the chlorinated copperas. John J. Collins, superintendent of filtration, reports that the present treatment with Ferri-Floc and quicklime removes color, iron, and manganese from the water and produces a stable, noncorrosive effluent.

Omega loss-in-weight gravimetric feeders apply the Ferri-Floc. Adequately mixed, the chemical dissolves in three to four parts by weight of water at 90° to 100°F. It is slightly hygroscopic and, for this reason, requires proper engineering of storage and conveying facilities.

The Ferri-Floc is delivered in bulk carload lots to a railroad siding, about 5½ miles from the water-purification works. A Holly pneumatic transfer truck removes the chemical from the car and delivers it into a storage silo of glazed, segmented tile masonry. This silo has an inside diameter of



16 feet, a height of 55 feet, and a capacity for 180 tons of the material. This, plus the 40 tons of storage space, provided in the feeding hopper on the fifth floor of the head house, assures a maximum of approximately 116 average days of supply.

The Ferri-Floc, stored in the silo, is conveyed pneumatically by a motor-driven air blower and control equipment through a 4-inch underground conveyor pipe for a distance of approximately 600 feet to the concrete feeding hopper.

A Worthington dehumidifying unit removes the moisture from the air before it passes through the blower that is housed in a single-story brick building adjacent to the silo. This unit is capable of reducing the moisture in the air at 90°F and 90% relative humidity to 0.035 of a pound per 100 cubic feet, and the moisture in the air at 60°F and 100% relative humidity to 0.02 of a pound per 100 cubic feet. As a result, the Ferri-Floc is kept dry and the surface of the underground conveyor pipe is free of deposit. The maximum, minimum, and average dosages are 0.75, 0.53, and 0.64 of a grain per gallon respectively.

Moorhead, Minn.

Moorhead, Minn., uses excess lime and Ferri-Floc in an unusual plant. The rapid-settling characteristics of the iron salts permit Joseph E. Young, superintendent of public service, to reduce the hardness of half the water from 280 ppm to 32 ppm. He blends this "supersoftened" water with the raw water from his well field to produce a hardness at the taps of 78 ppm. This method permits him to use a softening plant only half the size of one required to soften the entire supply.

The Moorhead water is drawn from a well whose water is much harder than the city's older supply. After treatment, the color index of the finished water drops from 5 to less than 3, and the pH rises from 7.5 to 8.8.

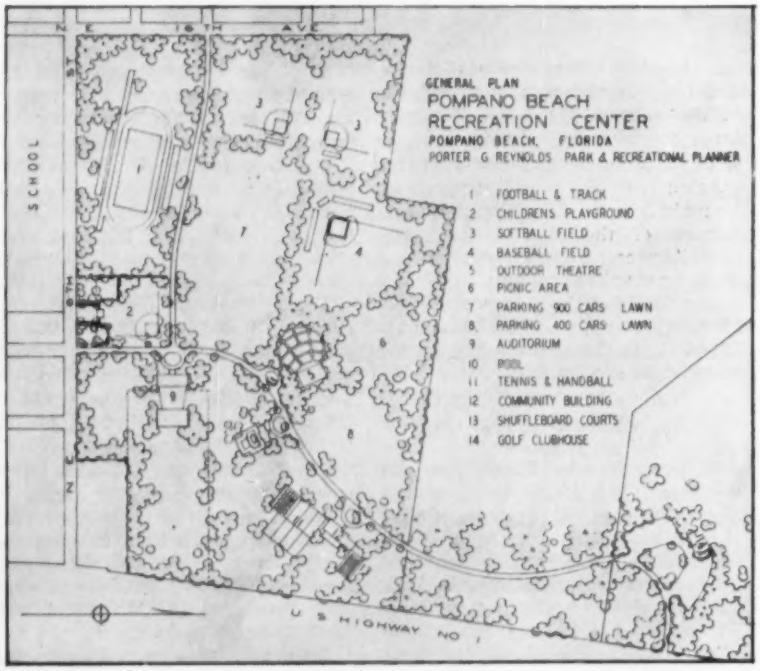
Essentially, the plant consists of two rectangular Spaulding Precipitators, a recarbonation basin, four filters, and a high-lift pump station. Water enters the plant's mixing flume, which is equipped with horizontal baffles, where the excess lime and Ferri-Floc are added. It flows almost immediately to the Precipitators where it is permitted to rise through the suspended sludge blanket. The water passing from the Precipitators averages less than 5 ppm of suspended floc. The water flows to the recarbonation basin where carbon dioxide from the flue gas of the heating plant corrects the effect of the excess lime.

Mr. Young selected ferric sulphate after lengthy experimentation with other coagulants. He finds it easily handled in a solution-type feeder.

New Recreation Center Opened in Pompano Beach

By CARL SANBRIDGE,
City Manager
Pompano Beach, Fla.

THE City of Pompano Beach, Fla. (population 6,000 plus), has recently opened the first section of a new 260-acre recreation center. Facilities included in the first stage of the development of the center are a swimming pool and bathhouse, children's playground area, tennis courts, and an 18-hole golf course. A roadway connecting these various facilities has been completed, and an underground sprinkling system is being installed to serve the areas developed thus far.



Finance

The improvement has been financed by a $400,000 general obligation bond issue that was previously approved by city voters. The site was acquired from the federal government after the war, and permission to use the property for recreational purposes was obtained from the Civil Aeronautics Administration, which has technical supervision over the land.

The Pompano Beach Recreation Commission, headed by William H. Huber is guiding the development of the project, which is under the active supervision of the city manager. Porter G. Reynolds, landscape architect and park and recreational planner, was employed to prepare a master plan for the center.

When completed the center will also contain an auditorium, outdoor theater, picnic areas, community building, shuffleboard courts, football field, and track, baseball field, softball fields, and parking areas for 1,400 cars. The center is located next to one of the city schools and will augment the existing school playfield. In addition to serving local residents, the new center will help make Pompano Beach more attractive to tourists visiting Florida's popular east coast.

El Cajon, Calif., uses an unusual, compact, circular design for its new activated-sludge plant

PHOTO COURTESY OF DORR-OLIVER

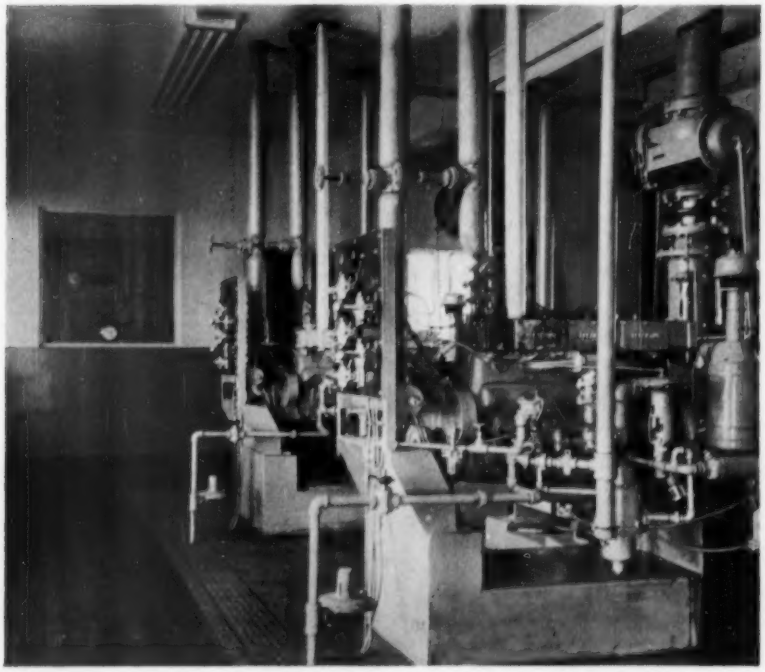
In the El Cajon plant aeration basins encircle the primary clarifier.

'Round and 'Round the Sewage Goes

By DAVID H. CURRIE
Currie Engineering Company
San Bernardino, Calif.

ACTUALLY the sewage doesn't go 'round and 'round; it only appears to. The El Cajon plant is built to a circular design, originally developed by our company and now marketed by Dorr-Oliver. Known as the Currie Clareator, it combines primary settling and aeration in a single unit, thereby reducing the cost of the structure and holding head loss throughout to a minimum.

The sewage first enters a Dorr clarifier at the center of the Clareator where it drops its easily settleable solids. Then it proceeds to the annular aeration channels, partitioned to provide a stage of preaeration and a second stage of reaeration in addition to the activated-sludge treatment. A 60-foot Dorr final clarifier permits the activated sludge to settle out for return to the reaeration tanks, except for a small portion that is diverted to the primary clarifier inlet for settling with the primary solids.



The gas-fueled blower engines have pneumatic standby controls on the front of each unit. The switchboard in the office room is visible through the glass panel.

Difficult Design

Preparation of the design of this plant was a task that made our heads go 'round and 'round. Six years ago, we delivered a report on sewerage to this city when its population was only 5,000. Today it is triple that size, and an 800-acre annexation promises to add 3,000 persons more —and still another of similar size is scheduled.

We based the design of the present plant on a population of 30,000 people, each contributing 80 gallons per day. Thus we needed a plant able to receive and treat 2.4 mgd (million gallons per day) so thoroughly that it can discharge effluent to a stream bed that remains dry except for very infrequent rainy periods.

The primary and secondary clarifiers provide a 2.3-hour detention period, with a surface loading rate of 850 gallons per square foot per day. The aerators provide 5.5 hours of aeration, based on 125% of the design flow. The digesters provide a capacity of 4 cubic feet per capita.

Odor Control Important

For some reason, a sewage-treatment plant in this area seems to have invited residential development. Consequently, we have taken every precaution to avoid odors. For example, the operators can preaerate the sewage entering the plant, and return a

portion of the stabilized final effluent to the raw-sewage inlet. Both steps help overcome odor problems arising from the long detention period prior to treatment when the sewage has a tendency to become septic. Our precautionary steps must have been effective since we were very pleased to learn that the plant occasionally has been mistaken for a water-filtration plant.

Flexibility of Design

We have provided the utmost flexibility in the plant design. Preaeration capacity can be used for aeration of the activated sludge. The sludge reaeration and aeration tanks can be divided to provide any desired ratio between sludge reaeration and mixed liquor aeration; and sections can be isolated to reduce the total aeration capacity. In the accompanying photograph, approximately 50% of the aeration capacity is in use.

Only an 8-inch difference in elevation exists between the primary and secondary clarifiers, permitting removal from service of either tank for maintenance, during which time the plant will operate as an activated-sludge plant without primary settling. The aeration tanks are provided with sprays, using plant effluent for control of foaming.

Neither grit chambers nor bar racks have been provided in this plant, since very little grit is accumulated with separate sanitary sewers. Occasional clogging of the sludge-pump check valves with rags, while inconvenient, requires much less of the operator's attention than a bar screen.

Advantages of Circular Design

The circular design not only provides compactness, but also simplifies construction. We used hoop reinforcing and constructed the walls with gunite concrete to reduce forming costs. The intermediate circular wall in the aeration tanks is only 4 inches thick and is designed for only a 12-inch differential pressure. This wall simplifies flow control, giving the chamber the proper proportions for spiral flow aeration. In addition, the trough on top of the wall provides space for the air line supplying the porous plate diffusers. These diffusers are installed in precast concrete holders set on concrete pedestals. The air to each plant holder is individually controlled through a regulating valve.

Sewage flows to the plant by gravity. The only pumping required is for the raw and activated sludge and for recirculation of the effluent.

Cost studies indicated that the use of sludge-gas-powered engines to drive the blowers that supply the plant with air was most economical. Because of high standby charges for electrical power for this service, three Buda Model L-525 engines were installed. Two of them will provide 2,500 cfm of air, or the maximum air requirements of the plant. These are automatically controlled to start a standby engine in case of failure of the running engine. Propane gas stored in two 1,000-gallon spherical tanks provides standby fuel.

We have provided the engines with Vapor Phase cooling, furnished by Engineering Controls, Inc., of Los Angeles. This permits the engines to operate at higher temperatures where corrosive effects of the gas are eliminated and efficiency is greater. The cooling water develops steam that is condensed in a heat exchanger. This, in turn, heats the water used to keep the digesters at proper temperatures.

Before the city built this plant, the stream bed into which effluent was discharged — dry, except for rare rainy spells—was filled with decomposing sludge extending for a mile or two below the old plant. After a year of new plant operation, these deposits have practically disappeared and have been replaced by a clear stream flowing in a sandy channel.

The plant was constructed by A. H. Famularo, of Santa Ana, Calif., at a cost of $361,000. It is supervised by Robert J. Palette, chief operator.

Munich to Reduce Street Traffic

MUNICH, the capital city of the State of Bavaria, Germany, has 900,000 inhabitants with one motor-vehicle to every eight and one pedal-cycle to every three inhabitants.

The most important of the radial roads are the three *autobahnen* from Salzburg, Stuttgart, and Nuremberg. These terminate at the edge of the town, connection between them being provided only via the street system of the inner area of the city. Three projects for linking these autobahnen together have been considered.

Project 1: **Construction of an autobahn ring around the edge of the city (ring solution) with no intersections at grade, dual roadways, 23 access points, 23 miles of autobahn.**

Project 2: **Remodeling of the urban streets that encircle the inner area (tangent solution) with 140 intersections at grade, dual roadways only in a few sections, city transit on many sections, 14 miles in length.**

Project 3: **Construction of an expressway system at the edge of the inner area (star solution) with no intersections at grade, dual roadways, 26 access points, 144 miles in length, of which 7½ miles would be an elevated road.**

Which method would bring the greatest relief to the city's network of streets?

Results of Study

The study for the Federal Ministry of Transport in Bonn, the Bavarian Ministry of the Interior, and the City of Munich, found that Project 2 would carry, on the average, about 1.5 times as much traffic as Project 1, while Project 3 would carry about 2.5 to 3 times as much. In other words, Project 3 would be much more effective than either of the other two in relieving the existing street network of traffic.

With Project 1 (the outer ring) the number would drop to 9,748, with 5,038 cars or 34% avoiding the business district.

With Project 2 (the tangent of remodeled streets) the traffic passing through the inner district would be 6,384, with 8,402 or 57% being diverted.

With Project 3 (the expressway around the business district) only 2,750 cars would pass through the district, with 12,036 or 81% being diverted.

Whether or not it is desirable to carry out Project 3 does not depend solely on its traffic value, which is clearly greater than that provided by any other project. Many questions arise from the structural, town planning, political, and financial points of view that will affect the final decision —and these were not dealt with in this study. However, the example of Munich shows that the general conception of high-capacity expressways, leading as close as possible to the center of the town, is beginning to be accepted in the big European cities as the forward-looking solution of the traffic problem.

Editorial Note: Excerpts from "A Traffic Study Concerning the Arterial Road System in the Munich (Germany) Area," by Max-Erich Feuchtinger and Johannes Schlums presented at the Second International Course in Traffic Engineering held at Burgenstock, Switzerland, September 20-25, 1954.

The Requirements of A Good Housing Ordinance

By RALPH J. JOHNSON, M. S.*

HOUSING codes are not new. As long as 4,000 years ago there was a housing code of a sort in Babylon. Legislation regulating housing existed in China about 1,000 B. C., and in Rome in the days of the Empire.

Housing code provisions have been in existence in this country for more than 300 years. The New York Tenement House Act of 1901 was a significant milestone in the nation's housing code history. During the World War I period, several states adopted model housing laws and a few communities established standards for existing housing. It was not until the period following the end of World Was II that the rehabilitation of existing substandard housing, through compliance with the health and safety standards in housing ordinances, began to be widely recognized as another important method of improving substandard housing.

What is the definition of a housing ordinance? A housing ordinance establishes minimum health and safety standards governing the facilities, such as plumbing; the maintenance, such as cleanliness and sanitation; and the occupancy, such as crowding; of existing housing. These standards must be so related to the protection and promotion of the health, safety, and welfare of the people of the community that the police power may be used to obtain compliance with these standards.

A GOOD HOUSING ORDINANCE is essential to a successful housing rehabilitation program. To be effective, the ordinance must have adequate administrative legal provisions, as well as establish standards for facilities, occupancy and maintenance. Insofar as possible the standards should be of the performance type and attuned, within reasonable limits, to the housing facts of the community.

Once a good ordinance is obtained, the success of the rehabilitation program will depend upon the effectiveness of the compliance program. Basically this is in turn dependent on the judgment of the enforcing officials and the degree to which they keep uppermost in mind the objective of the housing ordinance, namely: to improve the health, safety and living conditions of people.

Objective of Housing Ordinance

The objective of the housing ordinance is to improve the health, safety, and living conditions of the people in the dwellings and the community; not merely to improve the quality of the housing.

The minimum standards of the housing ordinance are retroactively applicable to all existing dwellings in the community. This principle was established by the Supreme Court of the State of New York in 1895, in the leading case of *New York City Health Department* v. *Trinity Church*, wherein the Court decreed that the owner was required to install inside running water in the dwelling even though the dwelling met the building code requirements at the time of construction.

It is almost gratuitous to say that a local housing ordinance should be based on a thorough study of the legal authority contained in appropriate state laws. Obviously, however, this is a basic requirement. In addition, the standards must be established so as to have a reasonable relation to the nature of the problem to be corrected and the improvement to be effected. Further, the police power and procedures of enforcement must not be used in an arbitrary or capricious manner that will be unduly burdensome on owners or occupants. These are merely the usual limitations on the exercise of the police power but they should be borne in mind as the ordinance is developed.

General Considerations

The housing facts of the community should be used in the standard setting process. While there is ample evidence in the fields of health and safety to justify the establishment of minimum standards for existing housing, there is not sufficient evidence to establish all of these standards on a precise and irrefutable physiological and psychological basis. In addition, the number of variables that have a bearing on the significance of any one standard is almost limitless.

While some standards that should be included in a housing ordinance may be set with assurance, others should be related to the communities' housing facts if they are not to be unreasonable. For example, if typical construction practice has resulted in the enclosure of numerous back porches so as to form rooms with 7½-foot ceilings, it is not reasonable to state that the minimum ceiling height in this particular community shall be 8 feet. Therefore, it is important to obtain detailed facts about the quality of the housing in the community before attempting to set some of the standards in a housing ordinance.

As has been stated, the absolute minimum level of the standard is not always precisely definable, but rather covers a range of acceptability dependent upon many varied conditions. It is extremely important, however, to attempt to set the level of minimum standards as high as possible within that justifiable minimum range; otherwise the housing ordinance may merely legalize the

* Presented at Middle Atlantic Regional Conference of the National Association of Housing and Redevelopment Officials, April 28, 1955, by Ralph J. Johnson, Director, Construction Department and Research Institute, National Association of Home Builders, Washington, D. C.

perpetuation of substandard housing. This concept is complex, but basic to the development of a useful housing ordinance.

While it is conceivable that a good housing ordinance could be written by a single individual, it is doubtful if this would be desirable. Rather, representatives of groups of people who are primarily affected and knowledgeable in matters pertinent to housing should be invited to participate in the formulation of the ordinance. This drafting group might well include representatives of official community agencies such as, the city attorney, the legislative body, and the health and building departments; it should also include representatives of owner and occupant groups, and industry representatives such as, realtors, builders, and mortgage bankers; likewise, civic, religious, trade and public interest groups may also wish to be represented.

Experience has shown that this group should not contain more than 12 to 15 members.

Accommodating Interested Groups

Nonetheless, interest in a housing ordinance may be so widespread that as many as 100 groups or organizations may wish to be represented on the housing code drafting committee. Since this is not feasible, a housing ordinance advisory committee may be established as was done in Philadelphia, wherein all interested parties may have a chance to participate by commenting on the early drafts prior to public hearings.

In any case, once the draft of a housing ordinance has been prepared, there should be public hearings before submission to the legislative body. Thereby all the persons to be affected may be given an opportunity to be heard, to present contrary evidence or opinion, and significantly to help define for the legislative body and the administrator the level of community acceptance of the proposed standards.

Throughout the ordinance it is important to try to avoid the trap of lengthy, all-inclusive requirements in an attempt to cover all the combinations of conditions and living arrangements in the community. Rather, the ordinance should establish the extent and level of the intended standards, allowing and depending upon the good judgment of the administrator and his staff to carry out the intent of the ordinance.

Accordingly, a performance, rather than a specification ordinance is desirable. This presumes that the enforcing officials have sufficient knowledge of the applicable sciences to be able to use judgment. Both a performance ordinance and judgment ability are essential ingredients to a successful housing ordinance compliance program.

No community can afford enough inspectors to enforce the housing ordinance in all dwellings. Nor is this necessary if an adequate information program is carried out telling the substandard housing story to the community.

As is the case with other laws and regulations, most of the people wish to comply, especially if they have had an opportunity to assist or be represented during the preparation of the ordinance.

It is axiomatic then, that the housing ordinance should be as simple and brief as possible, thereby enabling people to read and understand what they are expected to do. Furthermore, unless it is absolutely impossible to avoid, the housing ordinance should be a self-contained document without reference to other ordinances or codes. It can readily be seen that unless these conditions can be met, it will be difficult for the city to take advantage of the desire for voluntary compliance which will surely follow a well planned program.

Administrative-Legal Requirements

The housing ordinance should contain a Section on Definitions. The definitions should be brief and clear. It is better to err on the side of including too many rather than too few definitions.

The ordinance should contain a Section authorizing entry to make inspections to determine the condition of dwellings. This provision of the ordinance should contain the safeguard of entry "at reasonable times," or entry "lawfully, at reasonable times." It is true that the ultimate constitutional issue has not been decided with respect to the right of entry as it relates to the Fourth Amendment to the Constitution. Only one relevant case has been brought before the Supreme Court of the United States—*Geraldine Little* v. *the District of Columbia*—and in this case the Court refused to rule on the constitutional issue essentially because the facts were so clouded.

The ordinance should contain a Section on enforcement procedure and hearings. In the entire enforcement process there must be true democratic effort by the administrator to balance coercion against education and persuasion. The persons to be affected should be given an opportunity to have a hearing before the administrator or an appeal body, before recourse to the courts. In this regard, I commend to you Section 3 of "A Proposed Housing Ordinance" of the American Public Health Association,* which in its preparation had the benefit of outstanding administrative-legal talent.

It is desirable to include a Section in the ordinance authorizing the adoption of rules and regulations by the enforcement agency. These will be most useful if they are published as an appendix in the same booklet with the housing ordinance. It is in these rules and regulations that the specific details of satisfactory compliance may be set forth once the intended level of the standard has been established by the legislative body.

Of course the ordinance should contain a Section on penalties. Typically, such Sections call for a fine or imprisonment and state that each day's failure to comply with the provisions of the ordinance constitutes a violation.

Most housing ordinances contain a Section on the conflict of ordinances and the effect of partial invalidity. It is quite possible that certain provisions of the housing ordinance may well be in conflict with other ordinances or regulations pertaining to housing. Therefore, it is considered to be good practice to state that the provision which establishes the higher standard for the protection and promotion of the health and safety of the people shall prevail.

All ordinances require an effective date. However, that date may be extended a year or two for certain provisions, such as those referring to plumbing, which might cause undue financial burden for some people unless they had such a notice period.

Physical Requirements

A good housing code contains provisions establishing the minimum facilities and equipment which are required. Ideally, this includes kitchen sink, flush water closet, lavatory basin, and bathtub or shower for every dwelling unit. In some cases it may be necessary to allow the

(Continued on page 177)

* "A Proposed Housing Ordinance," published in 1952, is available from the American Public Health Association. 1790 Broadway, New York, N. Y., at 75 cents a copy.

Frequent, regular waste collections plus modern equipment promote habits of maximum cleanliness in one of the nation's great resort areas

Regular collections with refuse bodies like this Gar Wood Load-Packer enable Miami Beach, Fla., to develop habits of cleanliness and maintain spic-and-span alleys. The covered bin (left) holds refuse containers and is required at all apartment houses.

Miami Beach Makes Community Cleanliness a Habit

By MORRIS N. LIPP
City Engineer and Assistant City Manager
Miami Beach, Fla.

IN Miami Beach, our waste collection and disposal program not only must insure sanitation, but must also set the pattern for maximum over-all cleanliness in our city.

Miami Beach is one of the world's leading resort cities. Our economical well-being and growth depend upon the tens of thousands of vacationers and tourists who visit our city each year. We want these people to return regularly and to spread the word about our city's beauty. They would be inclined to do neither if our standards of cleanliness were disappointing.

We have three problems of waste collection and disposal that few other cities experience: visitors outnumber our permanent population by more than 150% during some months of the year; vegetation grows rapidly the year around; and our need to learn to live with hurricanes.

To maintain a clean city, we have had to develop a waste collection and disposal program that makes community cleanliness a habit with our citizens, our visitors, and our crews. The development of this habit has automatically achieved for us most of the elements of a good waste-collection system. This means that we had to eliminate all conditions which either detracted from community appearance or did not prompt people to observe proper sanitary procedures.

A Good Foundation

We had a good start in this direction because our sanitary regulations are designed to keep alleys clean. Basically, we require covered, 18-gallon maximum capacity containers at all refuse-collection points. At all apartment houses, which make up a good part of our city, closed bins must be provided beside the alleys to house these containers. (Single residences receive carry-out service from the back of the residence so that alley bins are unnecessary.)

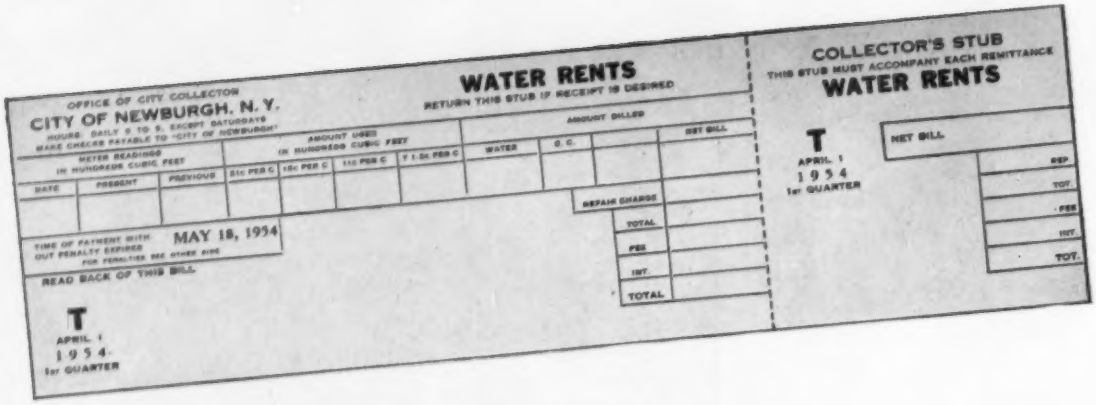
Regulations alone, however, establish responsibility but do not develop habits needed for maximum cleanliness, especially in alleys. The development of these habits, we decided, was up to our Department of Engineering. By setting a pattern for maximum cleanliness in every phase of our wastes collection and disposal operations, we would soon promote habits of cleanliness throughout the city.

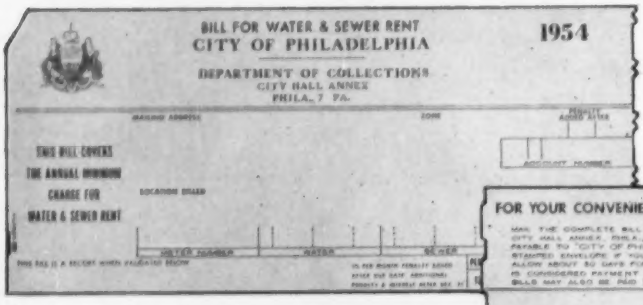
We first determined schedules for refuse-collection service that would encourage cleanliness. At no time is refuse allowed to accumulate at any refuse-collection point to a degree that might create or encourage unsightly, odorous conditions. Nothing discourages the habits of cleanliness more, we have found, than a refuse-collection service not equal to the people's efforts to maintain a high standard.

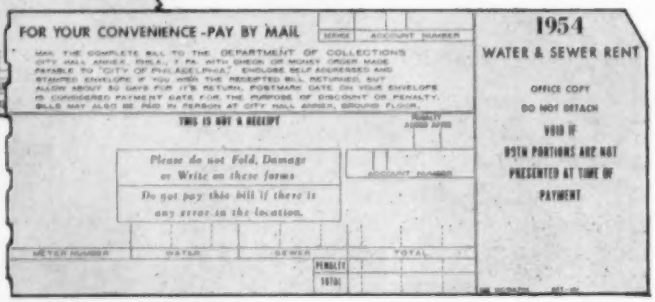
We provide daily collections for all hotels, restaurants, and businesses, collections every other day for apartment buildings, and three times a

(Continued on page 217)

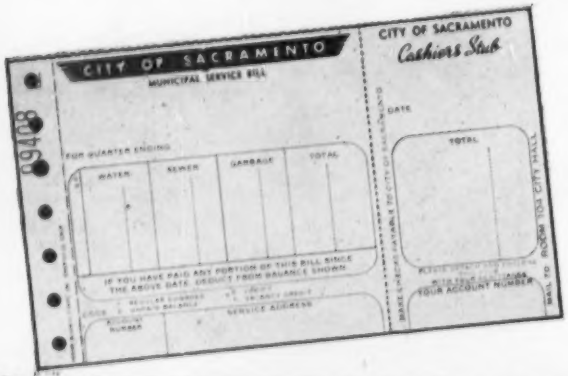
Some Typical

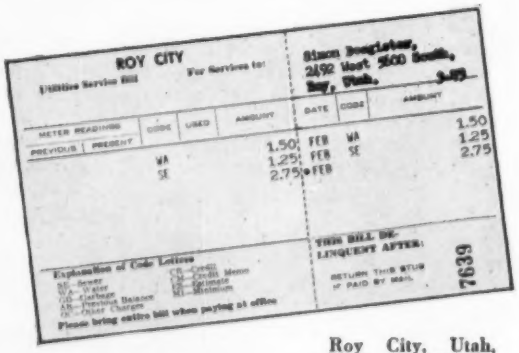




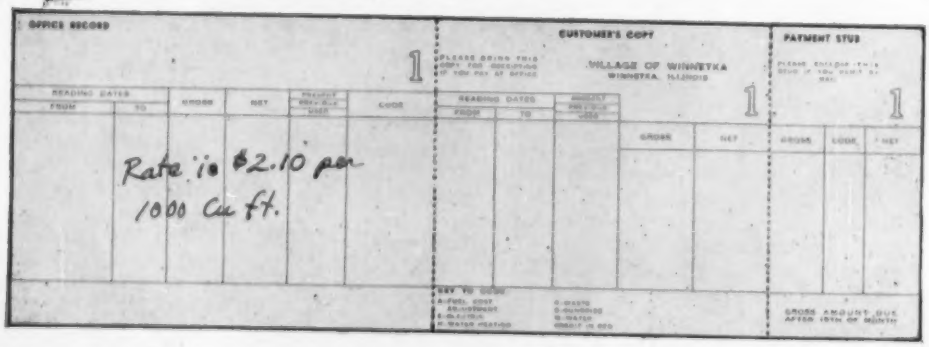

FOR YOUR CONVENIENCE - PAY BY MAIL
1954
WATER & SEWER RENT
OFFICE COPY
DO NOT DETACH
VOID IF
BOTH PORTIONS ARE NOT
PRESENTED AT TIME OF
PAYMENT
THIS IS NOT A RECEIPT
Please do not Fold, Damage or Write on these forms
Do not pay this bill if there is any error in the location.

(Top) Newburgh, N. Y., uses a detailed bill which permits listing of charges for each block in the rate. (Center) Philadelphia, Pa., uses the high-speed IBM system to bill its more than 500,000 accounts. (Below) Sacramento, Calif., sends a bill that combines water with sewer and garbage service charges. The bill beneath, sent by Winnetka, Ill., pairs water with electricity.





Roy City, Utah, mails its bills on a post card. Note code letters that identify charges.



Modern Water Rates

(PART XIV—Conclusion)

BILLING procedures for water utilities have definitely followed the trend toward automation. Of the 130 rates published in the current series, 82 use automatic billing equipment and 48 do not. However, most of those without the equipment are the smaller water works that serve relatively few customers.

Listed were 43 water works serving cities with populations of 10,000 or less. Of these, 32 use no automatic billing machines and 11 do. The smallest that does is Foley, Ala., with a population of 2,000.

In the 10,000 to 30,000 population category are 22 water works that use automatic equipment and 13 that do not. In the 30,000 to 75,000 category are 27 that use automatic equipment and three that do not. All 22 water works that serve cities of 75,000 persons or more are equipped with these machines.

Billing procedure shows a pronounced trend toward the post-card-size bill with detachable stub that the customer returns with his check, or receives as a receipt when he pays in person. Reflecting good management, the city will bill as many of its utility charges on the same card as is possible. These can include electricity, when the city has its own electric distribution system, sewerage, and refuse when financed by service-charge arrangements. Occasionally, the same equipment may be used for all other billing and payrolls.

Billing Cards And Some Special Water Rates

Some Representative Practices

Roy City, Utah, uses a typical post-card-type bill with a perforated detachable stub. Note that it permits multiple billing for water, sewerage, and garbage-collection service. Note also the extreme simplicity of the billing operation. Roy City has a population of 7,500 and approximately 1,000 active accounts. The city uses Burroughs billing equipment.

Sacramento, Calif., uses a similar type of post-card bill. Take note of spaces for water, sewerage, and garbage service charges. The city uses Remington-Rand equipment not only for this billing but for payrolls, and for preparing the city's tax bills. The city has 42,000 accounts for its 148,000 residents.

Winnetka, Ill., with a population of 16,000 uses a larger sized cardboard bill that lists charges for water, electricity, refuse collection, and other miscellaneous charges. The two right-hand sections are sent to the customer; the left-hand section is kept for office records. Winnetka's simple water rate adds to the efficiency of machine billing for its 3,500 active services. It uses National Cash Register billing equipment.

Newburgh, N. Y., has simplified its billing arrangements to make it more comprehensible to those being served. Essentially the bill is the same as the others; it has a detachable stub that accompanies each remittance. The bill, however, permits listing of the charges for each block in the rate. Newburgh has a population of 34,000 and 7,500 active services. It uses Burroughs billing equipment.

Philadelphia, Pa., with its 2,225,000 people and over 500,000 active services, has adopted the high-speed International Business Machine system of billing. The department uses an outsize billing card with the customary detachable portion that the customer can use as a receipt if he wishes.

Air Conditioning Restrictions

Until now, cities that have concerned themselves with the load imposed by air conditioners have merely placed restrictions on the size of the equipment. Most air conditioners use water in some way or another to remove the heat from the air. The simplest of them merely discharge the warmed water to the sewer. However, if the warmed water can be discharged to a cooling tower or similar cooler, then it can be reused and will not place such a great burden on the water supply.

At the 1948 annual conference of the American Water Works Association, Frank Amsbary, manager of the Northern Illinois Water Service Corporation and president-elect of AWWA, stated that the compressor type of air conditioners with water-cooled condensers would save 73% of the water required by air-conditioners of the water-cooled coil type, and that evaporative coolers would save 95%. With most of the existing water rates, a user of air-conditioning equipment finds its less costly to let city water pass through the conditioner once and discharge to the sewers, rather than provide these water-conserving device.

Consequently, most cities simply prohibit by ordinance the use of the larger air conditioners without water-conserving devices. At Champaign, Ill., served by the Northern Illinois Water Service Corporation, regulations prohibit the use of water for air-conditioning equipment when the water comes directly from the mains and serves as a cooling medium whereby the air to be cooled comes in direct contact with sprays or wet surfaces, or where water is used as a direct or indirect cooling medium in coils.

The regulation also prohibits the use of water directly from mains in all compressor-type units having a rated capacity of 1½ tons or less. It permits use of the water in units between 1½ and 5 tons equipped with water-cooled condensers. It re-

How this hydrant

PAYS A BONUS!

It's unique...it's the B-50-B

EVERY new installation of Darling B-50-B A.W.W.A. Hydrants . . . proves the advantages this new hydrant offers you.

Darling's ball bearing design cuts required operating torque more than 50%—an important factor in *any* system. Action is easy, smooth and sure!

Darling "O" ring seals provide a *dry-top, packless* hydrant, minimizing service and maintenance needs and eliminating the hazard of water reaching the operating threads.

This operating surety and low-cost performance of Darling B-50-B hydrants are bonus values that just can't be matched. You can get the B-50-B design in a wide range of Darling hydrant types to meet your particular installation requirements.

Send for Bulletin 5403

DARLING VALVE & MANUFACTURING CO.
Williamsport 10, Pa.

Manufactured in Canada by
The Canada Valve & Hydrant Co., Ltd., Brantford 7, Ontario.

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quires that compressor-type units of 5 tons or more be equipped with evaporative condensers or similar cooling equipment requiring only make-up water from the mains.

Chambersburg, Pa. requires air-conditioning units larger than 3 tons to have water-conservation equipment. The limit at Newburgh, N. Y. is set at 5 tons. Park Ridge, Ill., cuts the limit to 1 ton of refrigeration.

Elizabeth City, N. J., requires conservation equipment on new units of 10 tons or more and, on all other new air conditioners, restricts the discharge of water to no more than 1½ gallons per minute per ton of rated capacity.

Philadelphia requires all air-conditioning units of 30 tons or more, and all new units of 10 tons or more to have water-conservation devices. It currently is studying the possibility of reducing these capacities to 10 tons and 5 tons respectively.

One city, York, Nebr., reverses the trend by providing water at a slightly lower cost for air conditioning, but raises the bimonthly minimum bill from $2 to $12.60.

The American Water Works Association has directed attention to special charges to users of nonconserving air-conditioning equipment. The Association lists 22 cities that make these special charges, and details the practice of Atlantic, Iowa, where a flat rate of $2.50 per ton of capacity is added to the water bill of all users of nonconserving air-conditioning equipment. The charge is made from June 1 to September 30.

Water For Construction

At times, it is not practical to meter water used for construction jobs. In these cases, some water utilities make a flat charge for water used. The Commonwealth Water Company, Summit, N. J., makes these charges:

Single dwelling, 5 rooms or less	$6.25
Single or double, 5 rooms or more	9.40
Other structures:	
Brick, per 1,000	.12
Plaster, per 100 square yards	.50
Stone, per perch	.09
Concrete, per cubic yard	.06
Concrete or tile blocks, per 100	.12

The Jamaica Water Supply Company, Jamaica, N. Y., makes a more detailed set of charges as follows:

One or two-family dwellings	
Frame, per structure	$ 7.50
Stucco, brick, tile, etc., per structure	12.00
Frame and half stucco, per structure	9.00
Brick, per structure	15.00
Stucco on old frame	4.50
Brick filling in studs (additional)	3.00
Other structures, also road construction:	
Concrete, stone, terra cotta, and other masonry, per cubic yard	.07
Brick, per 1,000	.15
Plaster, tile, or other wall finishes per 100 square yards	.60
Macadam and other kinds of road where water is used, per 100 square yards	.15
Sidewalks, per 100 square feet	.15
Curbing, per 100 linear feet	.18
Garages	
One car, per structure	1.50
Two cars, per structure	3.00
Steam shovel, per month	7.50
Steam roller, per month	7.50
Concrete mixer, per month	3.75
Flushing backfill, per cubic yard	.03
Building demolition, per 10,000 cubic feet	7.50
Boilers, per 25 hp	7.50

The Johnstown Water Company, which serves Johnstown and vicinity and Cambria County, in Pennsylvania, makes the following building and temporary use charges:

Stone masonry	
20 perches or less	$1.7066
each additional	.0933
Brick masonry	
10,000 bricks or less	1.7066
each additional 1,000	.16
Plaster	
200 square yards or less	1.7066
each additional 20 yards	.16
Concrete work, cement sidewalks, or floorings, per cubic yard	.0933

The Water Authority of the Borough of Ambridge also has special rates for building contractors:

Stone masonry, per perch	$0.05
Tile, 8- by 10-inch, by 16-inch or 8- by 8-inch by 16-inch, per 1,000	.15
Brick and fireproof backups, per 1,000	.10
Plaster, per 100 square yards	.30
Concrete, per 100 cubic feet	.20
Cement flooring, per 100 square feet	.10

Tapping Charges

Before a water utility can start to earn an income through its water rates, someone must connect to its water mains. The charge for this connection is designed to cover no more than the cost of the work itself. Chillicothe, Ohio, makes its charge on actual cost plus 10%, for services inside the city, or plus 21% for those outside.

However, many people prefer paying a fixed cost, rather than a variable charge, so certain water works make set charges for the installation of services, varying them on the basis of the size of service and often on the type of pavement that has to be cut through. Charges made in Whittier, Calif., are representative:

Service diameter (in inches)	Cost for Unpaved Street	Cost for Paved Street
¾	$ 35	$ 60
1	50	85
1½	85	125
2	125	175

Salem, Ohio, makes a much more detailed set of tapping charges, varying them not only with the size of the tap, but also with the size of main connected. Its charges are listed below:

TAPPING CHARGES IN SALEM, OHIO

Service diameter (in inches)	Main diameter (in inches)	Gravel, dirt	Brick, concrete
¾	any	$ 44	$ 50
1	any	48	54
1¼	any	54	60
1½	any	59	65
2	4	62	68
4	4	77	83
2	6	73	79
4	6	86	92
6	6	102	108
2	8	76	82
4	8	93	99
6	8	110	116
8	8	134	140
2	10	92	98
4	10	111	117
6	10	124	130
8	10	143	149
2	12	101	107
4	12	116	122
6	12	131	137
8	12	150	156
6	14	140	146

Accidents reduced...costs cut...with HAPCO Aluminum Standards

When Hapco Standards are installed, there's real reason for civic pride. Not only do they last longer, they look better longer because their silver gray surface is resistant to virtually all atmospheric conditions. Furthermore they require no maintenance so that the investment in Hapco Aluminum Standards guarantees minimum overall lighting cost. For proof that "Aluminum costs less," write the Hapco Engineering Department.

What's more, their high visibility helps reduce accidents.

Hapco Aluminum Poles are sturdy enough for the heaviest duty, yet they maintain harmonious beauty with their surroundings. All Hapco Standards are Venetian column type, acclaimed by architects for eye appeal and strength. For street lighting, for traffic control lighting, for area flood lighting, these Hapco Aluminum Alloy Standards allow you the widest possible choice in fine lighting equipment.

Be sure to call your Hubbard representative for assistance in specifying lighting standards, traffic signal pedestals, flood lighting standards, and related equipment. You can order Hapco products through more than 200 leading electrical distributors throughout the United States.

FREE HAPCO Catalog

If you'd like more details on design features and specifications of the complete Hapco line, write for this new free catalog. It contains valuable information to help you plan the most efficient, most beautiful highway and street lighting, as well as any other outdoor lighting requirement. (Hubbard Aluminum Products Company, 6301 Butler Street, Pittsburgh 1, Pa.)

HUBBARD ALUMINUM PRODUCTS COMPANY
Division of Hubbard & Company
Pittsburgh 1, Pa.

The designers of the Menasha, Wis., power plant anticipated eventual new installations by providing plenty of floor space. The two 4,000-kw generators stand at the right, conveniently located to the boilers (background) and turbine panels (left).

Menasha Pulls a Switch

New steam plant replaces diesel-generated power to reduce costs 26%

By P. E. WIDSTEEN, *Superintendent*
Electric and Water Utilities
Menasha, Wis.

NO slave to fashion, Menasha, Wis., is suiting its style of electric-power production to its needs by replacing diesel generation with steam power. In 1948, the city's Municipal Power Plant set out on a program to reduce costs by constructing a completely new steam-power plant. Two new 4,000-kw turbine generators were put into operation early in 1949. The apex was reached recently with the purchase of a 7,500-kw generator. All three generators were purchased from Worthington Corporation.

This plant first began operation as a municipal utility in 1905, boasting three 75-hp diesels—two to drive pumps for the water system and the third to power a 60-kw generator for the city's 80 arc lights. As it has in most cities, the load curve rose steadily with the years until finally, in 1938, the utility had to tie purchased power into the system. But in the succeeding eight years, output doubled and the hard-pressed city put its problem to a firm of consulting engineers.

With peak loads approaching the 4,000-kw mark and threatening to rise even higher, the most practical and frugal solution was the construction of a coal-fired steam-generating plant with sufficient capacity to handle the entire load. By the time loads had reached a new peak of 4,790 kw in November 1949, the first 4,000-kw turbogenerator went into operation. An identical unit was put into service early the following year.

Reduced Costs Per Kwhr

Justification for the program was evident in 1952. Four years before, during the last full year of operation with diesel generation and purchased power, the utility handled 19,812,816 kwhrs of electrical energy at a cost of $240,772.87. In 1952, the two steam-powered units turned out 24,813,600 kwhrs and total production costs, including 167,700 kwhrs of diesel-generated power for "exercise," amounted to only $226,533.16—a 6% reduction in total costs. Cost per kwhr was down from 12.13

(Continued on page 185)

For independent photoelectric control of street lighting luminaires use...

JOSLYN

STYLE 120 LUMINAIRES
WITH INTEGRALLY-MOUNTED
FISHER-PIERCE RELAYS

Especially useful where isolated street lighting exists or where expense of installing pilot wires and relays is excessive. Turns lights on and off in accordance with pre-determined levels of illumination.

Relay circuit protected by integral expulsion lightning arresters.

Fuses protect both control and load circuits.

Completely independent and automatic in operation.

Requires no control circuit.

Fisher-Pierce Photoelectric Relays are mounted on Style 120 heads of standard Joslyn Luminaires with Wedge Band Glassware attachment as shown or with Direct Seal Automatic Latching Glassware.

JOSLYN Mfg. and Supply Co.

CHICAGO

Outdoor Lighting

Baltimore Snuffs More Gas Lights

Although 6,000 gas street lamps have been retired in the last seven years, Baltimore, Md., still has over 10,000 in nightly operation. These are destined to disappear by 1957

By W. RAYNER STRAUS
Mechanical-Electrical Engineer
Department of Public Works
Baltimore, Md.

When used on pedestal standards such as this one, street-name signs are 20 inches by 4⅜ inches; on residential standards, 17⅞ inches by 2 13/16 inches.

OF the 1,572 modern luminaires installed in Baltimore, Md., during 1954, all but 1,093 replaced gas lights and older types of electric lights. A total of 317 gas lamps was discontinued last year. There are 51,361 street lamps of all types in service in the City of Baltimore—40,902 electric lamps and 10,459 gas lamps—a net increase of 1,093 lamps. Of the incandescent units on a number of main thoroughfares and in areas with adequate illumination, 1,186 were increased from a total of 346,900 candle-power to 761,000 candle-power. Orders have been issued for the installation of underground crossover conduits for 1,710 future electric lamps ahead of new paving; 780 of these electric lamps are now ready for use.

Mercury Vapor

Our program of installing modern lighting facilities on heavy traffic streets and in channelized areas was continued with the placement of two hundred seventy-eight 20,000-lumen mercury vapor luminaires mounted on 30-foot ornamental lamp standards with 6-foot mast-arms. These installations follow the 175 Westinghouse 20,000-lumen OV-20 units on the Edmondson Avenue-Hilton Street interchange, as reported in THE AMERICAN CITY for November 1953. Contracts for steel light standards were awarded during 1954 to A & X Steel Products Co. for 710 standards and to Eastern Sales & Engineering Co. for 500 standards.

A test installation of two 35,000-lumen OV-60 color-improved mercury-vapor luminaires mounted on a twin mast-arm 30-foot standard was located at the intersection of 33rd Street and Hillen Road and the drive leading to Lake Montebello, on May 14, 1954.

During 1954 a total of 255 electric lamps replaced 317 gas lamps. Following is the rate at which gas lamps have been discontinued since January 1, 1948:

1948	703
1949	1,810
1950	178
1951	931
1952	1,276
1953	850
1954	317
	6,065
Gas lamps in service December 31, 1954—	10,459

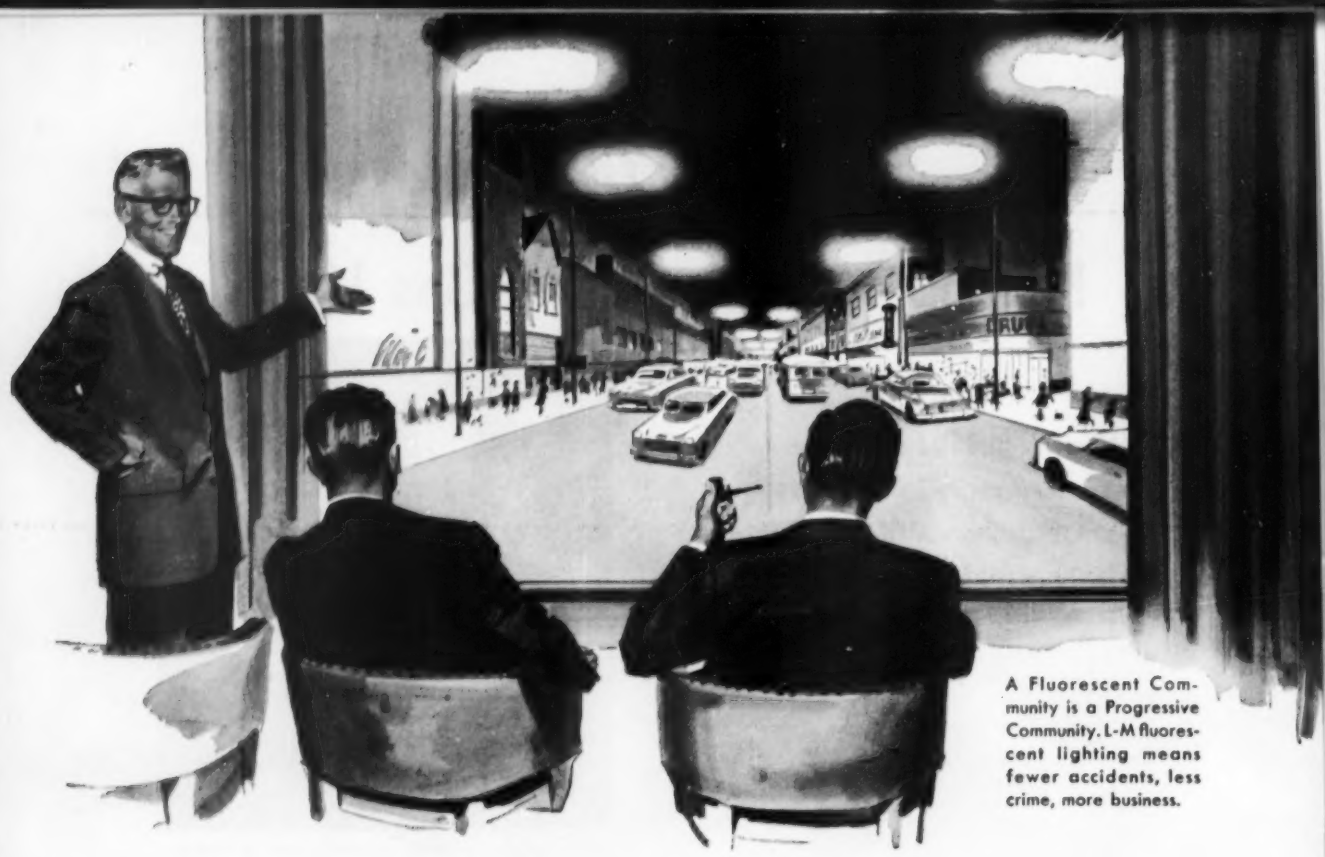
At the November 1954 election, the voters approved loan funds in the amount of $2,000,000 to cover the cost of completing by 1957 the conversion of the 10,500 remaining gas lamps.

Present plans call for the conversion of 5,000 gas lamps this year in the area south of North Avenue to the waterfront and from the eastern to the western city lines. This will take care of heavy populated sections that have high accident and crime ratios. The balance of the gas lamps will be converted in 1956, and these are located in outlying suburban residential sections with less population density.

The following schedule of rates for electric street-lighting service was authorized by the Public Service Commission of Maryland and was effective at the end of the June 1954 billing.

Monthly Rates:

1. Supply of Electricity	
(a) Series Circuit, per lamp watt	$ .72
(b) Multiple Circuit, per lamp watt	.89
2. Facilities Provided by the Company	
(a) Overhead St. Ltg. Circuit Wire, per foot	.14



A Fluorescent Community is a Progressive Community. L-M fluorescent lighting means fewer accidents, less crime, more business.

L-M's New Fluorescent Street Lighting Luminaire
Large Light Source, Minimum Glare

By **STACY STANDLEY**
Manager
Lighting Sales
Line Material Company

L-M's New Fluorescent Luminaire is a revolutionary improvement in street lighting. With its large light source the fluorescent luminaire produces an even, cool white color over a large area. Because of its large light source, it provides virtually glareless illumination.

Fluorescent luminaires provide a light that is particularly advantageous in business and shopping sections. The surrounding sidewalk area adjacent to the curb is illuminated and gradually fades out to make the background contrast as gradual as possible. This provides a wider scope of vision for both the motorist and the pedestrian, in addition to creating a cheerful and active atmosphere in the shopping area.

L-M's New Fluorescent Luminaires are available in these styles:

1 4-lamp V-shape for use on wide streets

2 4-lamp bi-directional tilted 20° toward the street for narrower streets and entrance ways

3 4-lamp bi-directional with level horizontal mounting for center parkway and area lighting

4 2-lamp uni-directional for underpass, flood lighting, perimeter and ramp lighting

The fluorescent lamp used in these luminaires has a rated lamp life of 7500 hours. This longer lamp life reduces the cost of relamping luminaires below any other type now used for street lighting.

Features of L-M's New Fluorescent Luminaires

Large light source • Even, cool white color • Minimum glare • Low power consumption • Longer lamp life

Separate efficient reflecting system for each lamp • Good vertical component across the whole surface of the street • Good balance between building and road surface

Two lamp ballasts • Easy accessibility for relamping • Wiring terminal block easily accessible • Ballast can be removed very simply • Bracket adjustable ±5° for leveling.

L-M's fluorescent luminaires are easily accessible for cleaning, relamping, wiring terminal block and ballast removal. Four-lamp unit has two ballasts with one tube on either side of the luminaire paired to each ballast. Thus, if one tube burns out, the light output of the luminaire is reduced only 50% in each direction. Also, if desired, two lamps could be switched off for part night circuits.

Get Complete Information

Details of the new L-M fluorescent luminaires are available. Ask the L-M Field Engineer for information, or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL Street Lighting

196-A-2

(b) Underground Single Conductor St. Ltg. Cable, Per foot	.47
(c) Lamp Fixtures—ornamental	
Incandescent, per lamp	.64
Mercury Vapor, per lamp	1.58
(d) Lamp Fixtures—other than ornamental	
Less than 200 candle-power — incandescent, per lamp	.18
200 candle-power and over—incandescent, per lamp	.76
Mercury Vapor, per lamp	1.69
(e) Distribution poles supporting no distribution circuit other than street lighting, per pole	.41
(f) Hexagon Poles (Gooseneck fixture support), per pole	.64
(g) Underground Multi-Conductor St. Ltg. Cable, per foot	.19
3. Inspection, Cleaning of Glassware and Renewal of Lamps	
Incandescent	
(a) Less than 200 candle-power, per lamp	.35
(b) 200 candle-power to and including 400, per lamp	.53
(c) 600 candle-power, per lamp	.59
(d) 1,000 candle-power, per lamp	.64
(e) 1,500 candle-power, per lamp	.76
Mercury Vapor	
(a) 10,000 lumens, per lamp	1.58
(b) 33,000 lumens,per lamp	3.00
(c) 20,000 lumens, per lamp	1.58
4. Municipal Duct	
(a) Duct occupied solely by St. ltg. cable, per ft. duct	.50
(b) Duct occupied jointly with other cable, per ft. duct	.25

Sizes of Lamps

11,718	60 candle-power
8,301	100 candle-power ornamental
5,113	250 candle-power
1,226	400 candle-power
9,112	600 candle-power
570	1,000 candle-power
102	1,500 candle-power
30	10,000 lumen ornamental mercury vapor lamps
432	20,000 lumen ornamental mercury vapor lamps
2	35,000 lumen ornamental mercury vapor lamps
36,606	total lamps maintained by the Consolidated Gas, Electric Light & Power Co.

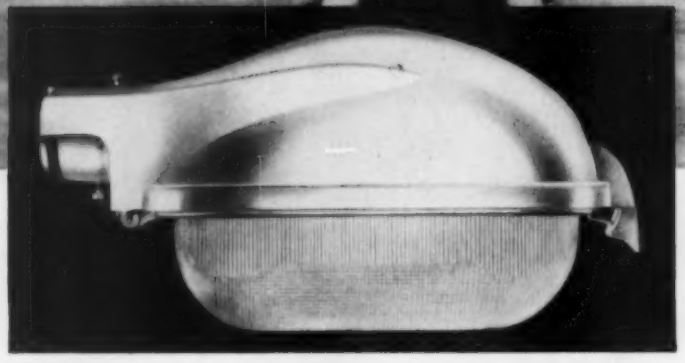
Street-Sign Rehabilitation Program

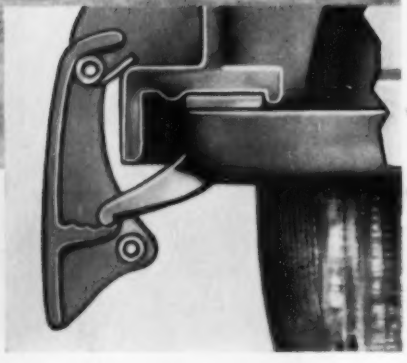
The sum of $40,000 was provided in the 1954 "Pay-As-You-Go" account to complete a program of rehabilitating the street-sign system. This project was completed on schedule with the installation of 12,436 new signs, with brackets and frames.

They are the Baltimore type of Quadtranslucent Plastic sign, which is manufactured by the Eastern Sales & Engineering Company, 1015 North Calvert St., Baltimore 2, Md. The signs consist of four aluminum frames mounted on a bracket and are placed on the large-size poles (23 feet to 30 feet) directly under the lamp, at a height 14 feet above the street. On the old type pedestal lamp they are attached at the base of the lamp fixture, as shown in the photograph on page 157.

A comparison of street lighting in front of the stadium of the Baltimore Orioles. Although smaller in scale than the one below, the photograph at the right indicates that the twenty 20,000-lumen G-E mercury-vapor lamps, which have been placed at 30-foot heights on stainless steel standards spaced 130 feet apart, do a more efficient job of lighting the area—and with less glare—than did the previous installation, below. Here, 34 old 400-candle power series lamps on 9-foot steel poles were spaced 75 feet apart.

A typical example of Westinghouse street and tunnel lighting. OV-20's in the foreground, FU-72 luminaires in the tunnel.





Automatic latch (upper right)—As globe closes, latch locks in position. Built-in, double-torsion spring provides driving power for latch. Leaf spring on hinge side provides upward pressure, seating globe tightly against gasket.

General Electric

Why Seattle specified Westinghouse OV-20 luminaires on their new freeway

Problem: Select a street light that would give Seattle drivers the best possible night visibility on the new Alaskan Freeway and smooth good looks by day. A point-by-point analysis showed Westinghouse OV-20 mercury luminaires to have these qualifications as well as the following superior mechanical construction and maintenance features.

One-piece cast aluminum housing—adds rigidity and weather resistance to the OV-20.

New optical system—New reflector and refractor design improves distribution of light along the street.

Weatherproof seal—between the housing and glassware, holds cleaning to a minimum.

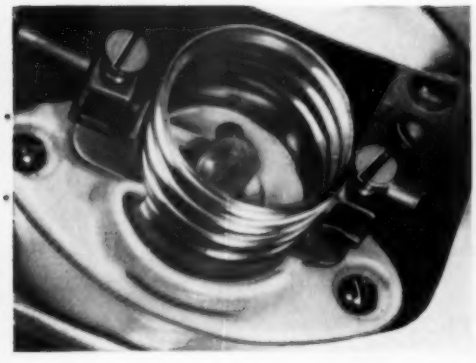
One-hand maintenance—Cleaning, washing and relamping can be done without tools, and without exposing the wiring or damaging the stationary reflector. Open-type latch makes it impossible to drop glassware while cleaning.

Smooth good looks—Mounted on either concrete or metal poles, the modern unbroken design of Westinghouse mercury luminaires adds a progressive appearance to large communities and small.

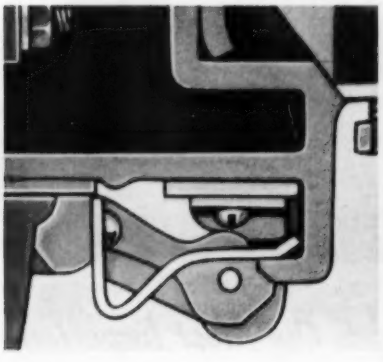
And the Westinghouse OV-60, second member of the mercury family, gives wide streets better visibility and greater uniformity of pavement brightness—with all the plus features of the OV-20.

Be sure you specify Westinghouse OV-20 mercury luminaires—the original mercury street light—copied in general appearance but never duplicated in performance. More information? See your nearby Westinghouse representative. J-04379

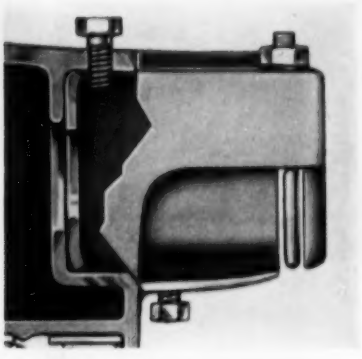
YOU CAN BE SURE...IF IT'S Westinghouse



Pressure-type terminal makes sure of a tight connection without damaging the conductor. Unnecessary maintenance expense is minimized by this construction.



Open-type hinge speeds cleaning time. To remove glassware, swing back and lift out. This design feature makes maintenance quick and easy.



Bug-proof wiring—Offset pipe stop shoulder, inside slip fitter, prevents entrance of water. Felt gasket on pipe stop eliminates dirt and bugs.

General Electric Fluorescent Street Lighting

Designed for the Community of Distinction

Quite frankly, fluorescent street lighting is designed for the above-average community. For fluorescent is the signpost of progress and prosperity. It's a symbol of a town with pride—pride in its people—pride in its government—pride in its hospitality—pride in its capacity to cast aside the old and embrace the new.

This is street lighting that says to the world—here is a good place to live, to work, to play, to shop, to invest. Here is a city well-managed, clean, attractive—a Community of Distinction.

For those fortunate cities whose officials are alert to progress, General Electric offers its services to assure the finest fluorescent street lighting any city can install.

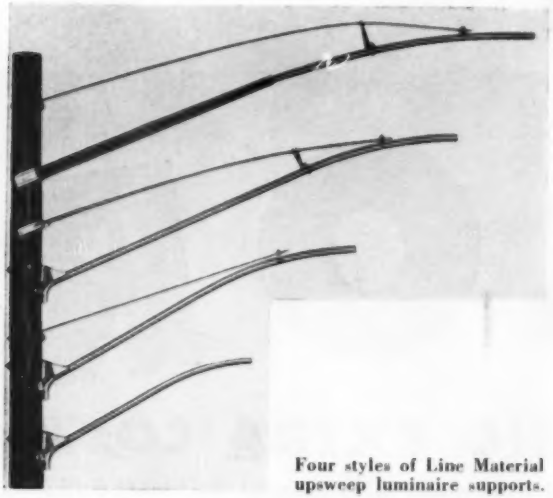
The full story of G-E fluorescent street lighting is told in a new bulletin, GEA-6094. You can get a copy from your nearest G-E Apparatus Sales Office, or by writing to Section 452–159, Outdoor Lighting Department, General Electric Company, 1400 Western Avenue, West Lynn 3, Mass.

"Out of Darkness," a new, dramatic film story of how one community met its street lighting problems, is now available for showings to civic groups, community service organizations, etc. This 16-mm, sound, black and white movie runs 26 minutes. Borrow a print of "Out of Darkness" from your nearest G-E Apparatus Sales Office.

Progress Is Our Most Important Product

GENERAL ELECTRIC

ANOTHER



Four styles of Line Material upsweep luminaire supports.

Upsweep Luminaire Supports

A NEW line of luminaire supports offers grace and simplicity. Particularly applicable to joint use poles where pole space is at a premium, these upsweep supports come in four styles, in varying lengths of 2-foot increments: 4-6 foot without guy rod; 4-10 foot with guy rod; 8-16 foot with double guy rod; and 10-20 foot "A" frame with single guy rod. All styles are available in 1¼-inch steel or aluminum pipe, while the "A" frame type is also available in 2-inch steel or aluminum pipe. For further information, write to the Line Material Company, 700 W. Michigan St., Milwaukee 1, Wis.

Harrison, N. Y., Street Lamps Live Long at Low Cost

Harrison, N. Y., reports that greater safety and volume of business have been achieved with 5 times more street lighting.

CIVIC-MINDED municipal leaders in Harrison, N. Y., recognized the need for better street lighting. As a result, this town of 6,500 persons now has mercury-vapor street lighting.

To make sure the installation would be appropriate, the town officials called in engineers of the Consolidated Edison Company and the Westinghouse Electric Corporation to assist them in making their lighting layout. Consolidated Edison furnishes electricity to Harrison—and many surrounding towns—and laid out circuits and distribution requirements. Westinghouse lighting engineers worked out lighting performance, pole spacings, and luminaire selection.

High-intensity illumination for Harrison's large parking lot and the main street arteries leading to the railroad station and shopping areas is provided by 50 Westinghouse OV-20 luminaires, each using a 400-watt mercury lamp. Although five times more powerful than conventional incandescent lighting fixtures of the same wattage, these units use only slightly more electricity and have a life expectancy five times that of incandescent lamps.

This is said to be the first full-scale adaption of a mercury system in Westchester County, N. Y. More people, they say, are parking their cars downtown at night than ever before. New parking space is being added.

What They Say in Harrison

Alfred F. Sulla, town supervisor, says, "In modernizing the street lighting in Harrison, safety of shoppers and commuters was foremost in our minds. We feel our lighting system has achieved this objective."

Police Chief William Donovan comments, "As police chief of Harrison, I feel our new street-lighting system discourages crime and vagrancy. Our force can do a faster job of policing the area with good visibility. It's made our job easier."

Sid Seligson, owner of Seligson's, says, "Not only is our new lighting system safer, but it has helped focus more attention on our stores in town, giving them attractive nighttime appeal. We feel that good street lighting helps bring in more business."

Mrs. J. Howard White, states, "Frankly I was frightened, before our new lighting system was installed, if I had to get into my parked car late at night. I feel much safer now. Many of my friends feel the same way."

★ ★ ★

"OUT OF DARKNESS" is a new 26-minute motion picture on the power of street lighting to reduce traffic accidents and crime. It is available to city officials, without charge. Address: Mr. H. J. McDevitt, General Electric Co., Schenectady 5, N. Y.

ANOTHER DUNCAN BONUS!

COLOR

NOW...AT NO EXTRA COST

Identify different time and rate zones with colorful DUNCAN-BUILT meters. Available in bright aluminum, Hawaiian bronze, gunmetal, yellow, bright red, blue, black and green.

DUNCAN-MILLER "50" *The* DUNCAN-MILLER "60" DUNCAN-Automaten

An easy, convenient, *proven* method of collecting parking meter fines. Violation ticket-envelopes are available at low, quantity prices.

Write Today . . .

DUNCAN PARKING METER CORP.

835 N. WOOD ST., CHICAGO 22, ILL.

FACTORIES: HARRISON, ARK. and MONTREAL, P.Q., CANADA

Manufacturers of fully automatic and manual parking meters.

Traffic Control

For Street Lighting or Floodlighting

Investigate

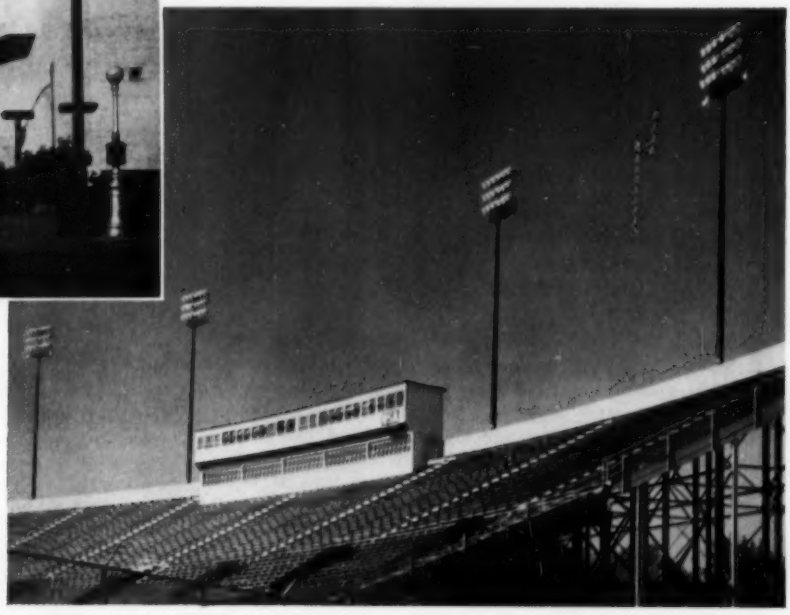
KERRIGAN

Weldforged TRADEMARK

STANDARDS

- ✓ Tall, tapered and beautiful
- ✓ Weldforged of high-strength, low-alloy steel
- ✓ Conform to I.E.S. Street Lighting Codes
- ✓ Now in use all over the United States

Kerrigan standards line San Jacinto Street, Houston, Texas. Looking North at the new County Court House.



Four of eight standards used to light Vanderbilt University's football stadium. Kerrigan 1400K, octagonal, continuous tapered standards, some as tall as 120 feet. Tallest in the Southeast. Each standard made in two sections and fabricated from high strength, J & L'S Jalten corrosion resistant steel. Each complete with flood mounting and service platforms made of Kerrigan grating. Each standard supports a battery of 18 flood lamps of 20,000 lumens, and is designed to withstand over 100 miles an hour wind pressures.

Write

for new catalog containing detailed descriptions and specifications.

New

For better lighted city streets the standard is Kerrigan!

KERRIGAN IRON WORKS, INC.

NASHVILLE, TENNESSEE

General Sales Office 274 Madison Ave. New York City

GUARANTEED GREATER

Traffic Control

Parking 5,000 Cars a Day

By HENRY G. KRAMER, *Manager*
Grant Park Garage
Chicago, Ill.

I WILL not dwell on the complexities of parking 5,000 cars a day, collecting the parking fees due, and then getting the individual cars back into the hands of their respective owners. In this world's largest underground parking garage there is space for 2,359 automobiles on the two decks. It is obvious that a garage of this size must have a *system* that is not dependent on even highly skilled employees. The system must be fast enough to handle peak parking periods without breaking down or causing confusion among the employees, strong enough to prevent collusion between attendants and customers. It must also give protection against "chiseling" by customers attempting to re-use an old receipt or leave the garage without paying.

The Grant Park Garage System

The Grant Park Garage system is geared to modern business machines. The system was designed by The National Cash Register Company and uses a Model 1500 NCR machine on each lane, seven units in all; a time clock on each lane to record time-in for each car; and eight Model 2000 cash registers for central payment of parking fees, with time clocks to record time-out for each car.

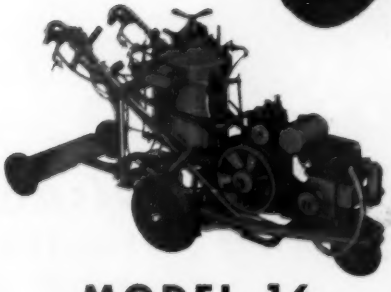
When a car enters the garage and approaches in the *self-parker* lane, the attendant sets up on the keyboard of the machine the code number indicating type of car, and the last four digits of the license number. Now the electric motor bar is touched and the machine automatically issues a ticket. The ticket is time-stamped on the IN line and given to the customer. The customer parking his own car is expected to retain the ticket until he returns; at which time the ticket is presented to the cashier as a claim check for the car.

If a car approaches in an *attendant-parking* lane, the attendant sets up the car code and license number in the same manner, but instead of having the machine issue a receipt, he inserts a four-part parking ticket, the machine prints on the attendant-parking ticket the

An attendant at the Grant Park Garage sets up on the keyboard of a National Cash Register Model 1500 machine the make of the car to be parked and the last four digits of the license number.

GUARANTEED GREATER AIR GUN RATIO than any other striper its size!

WALD
REFLECTO-LINER MODEL 12



MODEL 16

For applying ordinary paints or reflective materials in single or double lines, from 2 to 6 inches in width. Well balanced, with a 100% air reserve, the Model 16 is the ideal unit for outdoor painting operations. A complete list of accessories is available.

Air gun ratio, the "essence" of striping operations is higher with a Wald Model 12 than you will ever need on any ordinary marking project! The 3:1 ratio, plus the 100% air reserve, gives a fast, versatile machine with sparkling performance. Marking speeds range from 3 to 5 mph and the machine will handle all plain or reflective marking materials from the thin traffic paint to the thickest reflective materials.

Be sure . . . compare the Model 12 yourself. Write today for details and complete specifications.

WALD INDUSTRIES Inc.

HUNTINGDON, PENNSYLVANIA

PRISMO *because*

Prismo LifeLine because it is like this ad. It stands out from the ordinary run-of-the-mill traffic paints. Prismo LifeLine is better because:

- *There's no wait and wear. It is immediately Reflective.*
- *Prismo is water repellent—Reflective even when wet.*
- *Costs less to apply.*
- *Prismo remains brilliant longer as shown by actual tests.*
- *Prismo costs less.*

For further details about highway markings get our free full-of-facts catalog # 354.

PRISMO SAFETY CORPORATION • HUNTINGDON, PENNSYLVANIA

PRISMO PLASTIX

Permanent and reflective in all weather, it's preferred for a variety of uses including School markings, crosswalks, safety zones, stop streets, etc. Quick and easy to apply.

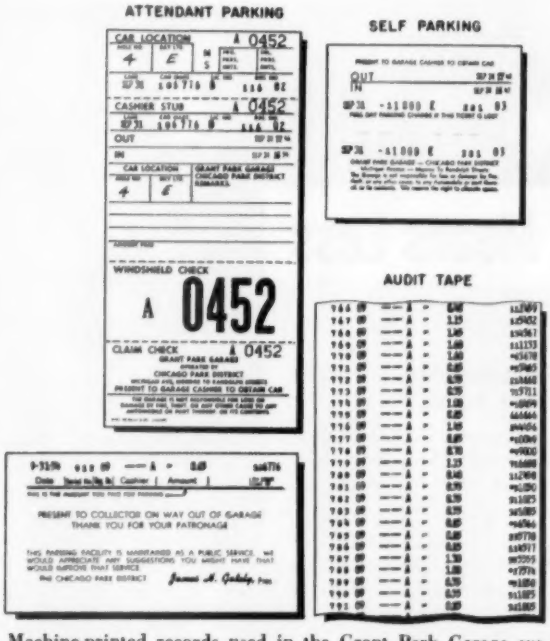
same information that is printed on the self-parker's ticket. The attendant time-stamps the ticket on the IN line and then tears off the claim-check stub and gives it to the parker. The remainder of the ticket is placed under the windshield wiper blade and the attendant or "hiker" drives the car to the parking stall. Here he writes the car location by aisle number and bay letter on the ticket on the windshield. The car-location stub and the cashier's stub, both carrying the aisle number and the bay letter, are sent to the office through a Kelly tube system, and the windshield check stub is placed back under the windshield wiper blade.

At the office, the car-location stub and the cashier's stub are placed in a vertical file in sequence by serial number, awaiting the return of the customer.

Why this Detail?

Why is so much care taken in keeping a machine record of car entries? The answer is that the entry record is one-half of the audit system. It tells exactly how much a customer owes. It prevents cars from becoming lost or stolen. It prevents possible collusion between attendants and customers. And it provides a permanent, printed record, by make and license number, of every car, thus enabling us to maintain an inventory control so that we will not get overloaded at any particular hour. To repeat, *the original machine record is an integral part of a complete system.*

Whether the customer is a self-parker or is parked by an attendant, the operation of the register at the garage cashier station is the same. However, the two transactions will be covered separately because of the special handling of the four-part ticket used for attendant-parked customers.



Machine-printed records used in the Grant Park Garage system. The code "106776" on the forms at the left is on the parking ticket and the customer's receipt. This number indicates the make of car and the last four digits of the license number. A sample of the register's detailed audit tape is at the right.

A cashier collects the money from the customer and records the entire transaction on the register. The machine-printed receipt is then given to the customer as a record.

When the self-parking customer comes to the cashier's window to make payment, his claim ticket is placed in the time stamp, and the amount he owes is written on the ticket. The money is collected from the customer, and the following information is recorded on the register: type of car and license number, obtained from the customer's claim ticket; total amount owed by customer; initial of cashier handling the transaction. When the electric motor bar is touched, the receipt is issued by the cash register and is given to the customer. The customer's claim ticket is dropped in a box to the right of the machine.

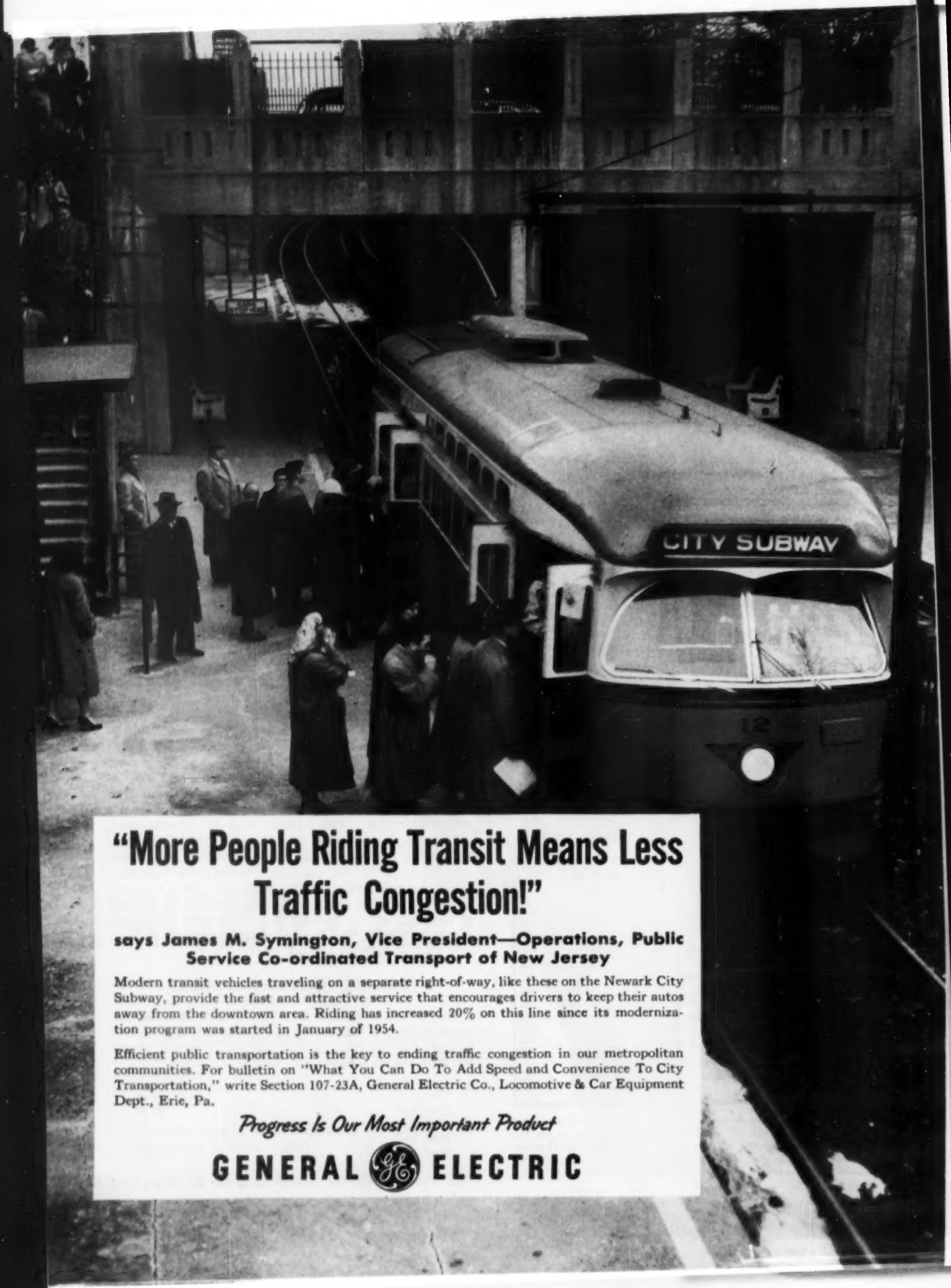
When a customer whose car has been parked by an attendant presents his claim check, the office copy is taken from the numerical file. The *car-location stub* of the file copy is sent to the hiker location through the Kelly tube. The *cashier stub* is time-stamped, and the amount owed is jotted on the stub. The cashier sets up the type of car, license number, and proper amount keys on the register, operates the machine, and gives the receipt to the customer. This the customer surrenders to the Gate Exit man as evidence of payment of the parking fee. The Gate Exit man checks the type of car and license numbers in each case as a precaution against theft.

Municipal Operation—Profitable?

Our system has been described to you in detail because it plays a major role in making this a profitable venture for the Park District and its investors. Parking fees are reasonable, too, as follows:

Hours	Self-Parking
First hour	$0.40
Next 8	.15
Next hour	.10
Next 14	.05

In other words, the rate is $2.40 for 24 hours, and



"More People Riding Transit Means Less Traffic Congestion!"

says James M. Symington, Vice President—Operations, Public Service Co-ordinated Transport of New Jersey

Modern transit vehicles traveling on a separate right-of-way, like these on the Newark City Subway, provide the fast and attractive service that encourages drivers to keep their autos away from the downtown area. Riding has increased 20% on this line since its modernization program was started in January of 1954.

Efficient public transportation is the key to ending traffic congestion in our metropolitan communities. For bulletin on "What You Can Do To Add Speed and Convenience To City Transportation," write Section 107-23A, General Electric Co., Locomotive & Car Equipment Dept., Erie, Pa.

Progress Is Our Most Important Product

GENERAL ELECTRIC

after 24 hours the scale of rates starts anew. A flat charge of 25 cents per car is added to the above rates for attendant parking. The garage makes no sales of gas, oils, or accessories, and offers no repair or washing service.

I hope that some municipality will profit from having read of our experience. If the municipality is not planning to "go underground," then perhaps the principles can be applied to open-air parking arrangements. However, if you are "going under," then you will be interested to know the line-up of our engineering group. Ralph H. Burke, Inc., Chicago consulting engineers, were the designers; John Griffiths & Son Construction Co., Chicago, was the general contractor; and the Ramp Buildings Corporation of New York was our consultant on management.

Big Lighted Letters Feature New Pedestrian Signals

By T. T. WILEY
Commissioner of Traffic
City of New York

THE first eight of 300 new pedestrian control signals were placed in operation in April 1955, at 7th Avenue and 34th Street, New York City. The pedestrian sees a WALK signal in green, followed by DON'T WALK in red, using the same WALK letters. In addition, the two-color (red-green) vehicle signals have been changed to standard three-color (red, yellow, green) signals, in order to provide a modern signal arrangement. This intersection is the first of 37 to be similarly treated during the next two months.

Special Features

The ordinary green vehicular signal gives incorrect information to pedestrians. Near the end of every green period it tells the pedestrians to cross when they should no longer be crossing. Furthermore, standard traffic signals located properly for drivers are often poorly located for pedestrians. I am convinced that the use of separate pedestrian signals timed properly for pedestrians will come into wide-spread use because our experience has shown that it is the only way yet devised for effective pedestrian control.

The "WALK"-"DON'T WALK" signals are 24 x 11 x 18 inches. Our engineers gave special attention to size, color and brilliance. The lettering is 5½ inches high and is spaced relatively far apart to prevent the bleeding together of the brightly illuminated message. This arrangement provides excellent visibility and the sign can be read from a distance as great as 150 feet.

Over the past two years, the Traffic Department has

The free-walking pedestrians of New York City are being given special signals to encourage them to observe the traffic signal lights.

if you need to **control heat**

it'll pay you to look into

Adlake mercury relays

Adlake relays require no maintenance whatever ...are quiet and chatterless...free from explosion hazard...dust, dirt, moisture and temperature changes can't affect their operation. Mercury-to-mercury contact gives ideal snap action, with no burning, pitting or sticking. Time delay characteristics are fixed and non-adjustable.

Adlake 98th year of serving the transportation and building industries

The Adams & Westlake Company
Established 1857 ELKHART, INDIANA • New York • Chicago

the *original* and largest manufacturers of mercury plunger-type relays

made a careful analysis of the various types of pedestrian signals available. None of the devices tested seemed to have enough "punch" to command the pedestrians' attention. Another shortcoming of the commercially available signals was that the word "WALK" is shown in green, which is the appropriate color during the "WALK" period but the wrong color during the "DON'T WALK" period. If a red neon "DON'T WALK" is used, then the color is wrong during the walk period. Furthermore, the neon tubing used cannot be bent accurately enough on signals of smaller size to produce a sharp and easily visible legend.

Accordingly, we developed a completely new pedestrian signal. The neon tubing is placed *behind* the sign in the shape of a geometric grid. The message can then be accurately stenciled on a glass pane on the front of the sign.

Advantage was taken of the fact that red neon tubing, when not energized, is entirely transparent. A red neon grid was placed immediately behind the "WALK" panel. A green neon grid was then placed behind the red grid. The "Walk" panel could then be illuminated with either red or green light. It was, therefore, possible in a compact sign, using only two panels, to have either green "WALK" or red "DON'T WALK." The Winko-Matic Signal Company of Lorain, Ohio, is the manufacturer.

Eight Signals Per Intersection

Eight WALK—DON'T WALK signals were installed, one at each end of the four crosswalks. When the green signal appears for east-west vehicular traffic, the pedestrian signals facing the pedestrians desiring to move in those directions display a steady green "WALK." Then, 12 seconds before the start of the cross street green period, the pedestrian signal flashes a red "DON'T WALK" at a rate of 60 flashes per minute. This indicates that the end of the crossing time is near.

The intersection of Seventh Avenue and 34th Street is one of the busiest pedestrian crossings in the world. Both are 60-foot arteries carrying heavy vehicular traffic.

More Right Shoulder Lines

TWENTY-TWO state highway departments, according to The Dorr Foundation, are interested in right shoulder line painting of highways. What the Connecticut Highway Department is doing about right shoulder lines was told in THE AMERICAN CITY for January 1955. The entire length of Merritt Parkway was painted in December 1954 by four crews, each painting three miles per hour of single line. Direct cost was estimated at $50 per mile per line. Wilbur Cross Parkway, it is said, will also be painted when weather permits. The Connecticut markings are on four-lane, divided highways.

It has been found that interest is developing in the outer-edge delineation of small roads of only two lanes. The State of New Jersey has completed 274 miles of outer-edge marking of most of the state's two-lane, blacktop roads. Upon completion of this two-lane highway marking program, the New Jersey Highway Department will begin to mark its four-lane highways with right shoulder lines.

The Kansas Turnpike Authority advises that right-shoulder-line marking is expected to be used on the entire length of the projected $160,000,000 Kansas Turnpike. This will be a 235-mile super-toll road running from Kansas City southwest to the Oklahoma state line to connect Topeka and Wichita.

Mounting interest in the marking of the outer edges of highways with continuous reflectorizing lines stems largely from the activities of Dr. J. V. N. Dorr of Westport, Conn.

Driving often at night on the Merritt Parkway, Dr. Dorr noted that the white line painted on the left side when used as a guide line caused the eye to be blinded by the glare of headlights. He believed that a line painted on the right side would direct the eye away from the lights. He first suggested the idea to the Connecticut highway authorities in October 1952. It was made a continuing project of The Dorr Foundation.

550-Car Parking Garage for Salt Lake City Store

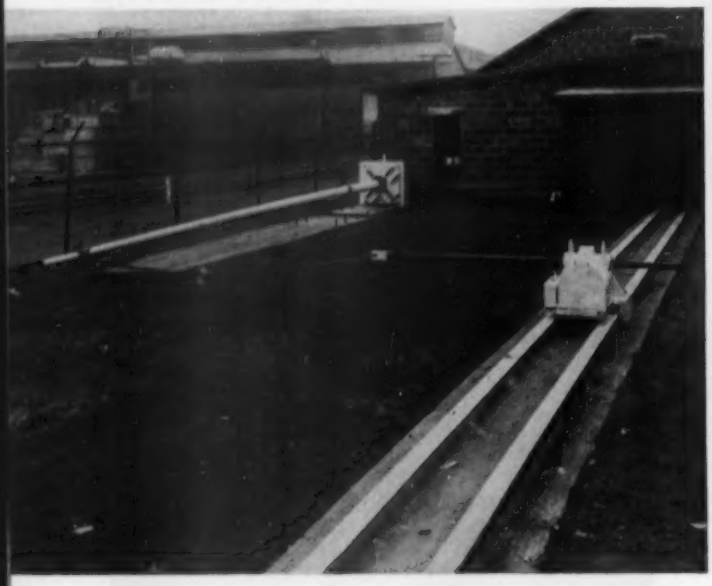
SALT LAKE CITY, Utah, like other cities, is feeling the parking problem and, consequently, many business firms are moving out to the less congested areas where they can provide parking for their customers.

A 5-story, 10-level, concrete-slab ramp garage, 300 feet by 100 feet in plan, has been built and opened for shoppers in the backyard of Zion's Cooperative Mercantile Institution in the heart of Salt Lake City. The 10-terrace structure — largest of its type in the Mountain States—provides 150,000 square feet of space for 550 automobiles. Primarily for shoppers, we expect this facility to help relieve the general parking problem that has developed in the business district. However, when I visited it recently, there was no room for me to park.

This, of course, is the history of most parking facilities provided in business districts. As soon as one is opened, it fills up and still more space is needed.

WILLARD A. KEMP, *Traffic Engineer*
Utah State Road Commission, Midvale, Utah

Bolting anchor base type Monotube pole to test block. Testing engine assembly will be attached to target ring at left of photo. This apparatus can withstand loads up to 500,000 foot pounds.



Monotube poles are tested in a horizontal position for better observation, closer load control and more accurate deflection measurement. Testing engine (on track) is attached to pole at point where measurement is desired.

Engineer at near end of fluted Monotube pole measures distance of deflection with transit as indicated by the line of sight. This line represents the permanent vertical reference line established by the locked transit.

MONOTUBE LIGHTING POLES . . . PROVED BY TEST.

Continuous testing and research by Union Metal engineers goes a long way towards making Monotube poles *your best buy.*

For example, here's one type of test: The pole is bolted to a heavy plate anchored to a concrete foundation and test load is applied. Load and deflections are read accurately with dynamometer and transit. Loads as high as 10,000 pounds can be applied.

This *proved* ability to withstand excessive stresses and strains, under all loads and weather conditions, is just one of many Monotube plus advantages. Monotube poles, available in a range of sizes and designs, offer attractive appearance, easy installation and complete conformance with recommended lighting practices.

To learn more about Monotube poles for *every* outdoor lighting need, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Lighting Poles

Water Plant Expands to Meet Demands

(Continued from page 124)

ent, and wash water. The additional clear well is an underground, square, reinforced concrete unit with a capacity of 500,000 gallons.

We centralized plant controls somewhat by installing a switch panel with indicator lights near the test laboratory so that the operator can see at a glance whether all the equipment is running. From this panel, he can start or stop all motors in the plant and even the pumps and screen in the pumphouse.

One of the more dramatic portions of the work was the installation of 7,920 feet of 16-inch and 5,820 feet of 12-inch cast-iron mains. There were two river crossings, one over the Maumee using 500 feet of 10-inch Clow cast-iron pipe which supplies the north side of town; the other, across the Auglaize River, required 400 feet of 12-inch pipe of the same type. Each line is covered with a 3-foot fill. The 16-inch and 12-inch pipe and 12-inch river crossing form a direct line from the plant to the east side tank to balance pressures on both ends of the system.

Elevated Tanks

In the same program, we installed our third elevated tank which holds 300,000 gallons and was fabricated and erected by the Pittsburgh-Des Moines Steel Company. As in the case of the other two, it was painted on the exterior with a coat of primer and aluminum, and lined on the interior with No-Oxide "A," a Dearborn Chemical Company protective coating. This and the north side tank have Ross altitude valves; the east side tank has a Chapman altitude valve.

We maintain two laboratories in our water plant. One makes hourly checks of hardness, alkalinity, and chlorine residual; the larger is used to make up standard solution, run composites of raw, plant, and system tap samples, bacterial tubes and plates, and assay chemicals. This room also serves as the superintendent's office and library.

Our staff consists of three operators, two maintenance men—one is also an operator, three cleanup and general handymen, and myself as chemist and plant superintendent.

With this new plant and distribution system, Defiance can face the future assured that it can supply normal water requirements without strain. Its people can be assured of bacterially pure water that is reasonably soft, clear, and free from objectionable tastes and odors, and in sufficient quantity to meet their residential and industrial requirements. If the city continues to grow as it has in the past, we can consider our water problems conquered until possibly 1975 or 1980.

Help Proposed for Bond Sales of Small Communities

LOWER interest rates for bond issues floated by small communities may result if tax law changes endorsed by the National Planning Association are carried out.* The changes were first proposed by President Eisenhower in January in his annual economic report to Congress. The changes would encourage the establishment of investment trusts that would specialize in the securities of local and state governments.

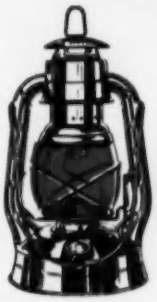
Right now the financial world has little interest in investment trusts dealing in local government bonds. This is true because a quirk in the federal revenue laws requires the payment of income taxes on returns from such trusts in spite of the fact that municipal bonds are normally tax-free. The proposed changes would correct this situation.

The encouragement of investment trusts specializing in municipal bonds will help the smaller and lesser known communities which often have trouble getting good breaks on interest rates for their bonds. This happens because the general financial market knows less about the credit standings of the small places than about the standings of the well-known cities. Because there are thousands of governmental units vying for bond buyers, it is a practical impossibility for financiers to take the time and trouble to become acquainted with the smaller units or to invest in confidence in their securities. This problem can be licked by investment trusts, according to the President and the NPA, for the trust managers would have time to study the credit possibilities of the smaller places and include bonds of such communities in the portfolios of the investment funds. The trust securities would then be distributed at desirably low interest rates to investors who, in making their purchases, would rely on the judgment of the managers of the funds.

* See "A Proposal of the Business Committee on National Policy," issued April 18, 1955 by the NPA, 1606 New Hampshire Ave. NW., Washington 9, D. C.

DIETZ

HIGHLIGHTS of SAFETY for the HIGHWAYS and BYWAYS

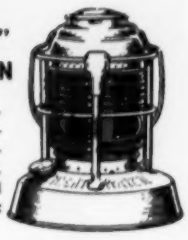


DIETZ TUBULAR LANTERNS

RED says DANGER – DIETZ LANTERNS say STOP. A complete line of economical, long burning, ruggedly made kerosene lanterns available with Ruby, Clear, Blue, Green or Amber globes, backed by the world's largest and oldest makers of portable light.

DIETZ "NIGHT WATCH" SAFETY LANTERN

A miniature beacon – with "Pencil Beam" – visible from any direction, near and far. Longest burning – well over 100 hours on pint of kerosene.



DIETZ-EMBURY "TRAFFIC-GARD" SAFETY LANTERN

"Magnified-Beam" seen for great distances. Wide, non-tip base. Long burning, economical. Stands rough usage.

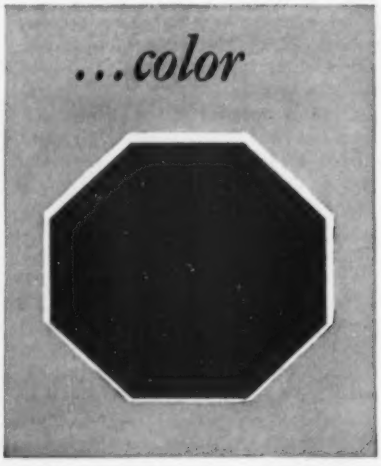
DIETZ HIGHWAY TORCHES

Complete line of bomb and flat base, Dietz *Blue* threaded collar burner models, and Dietz-Embury *Red* cam lock models. Tops in rugged quality.

Send for Descriptive Folders

R. E. DIETZ COMPANY
EST. SYRACUSE 1, N. Y. 1840

This sign says STOP...3 ways at once!



Day and night, rain or shine, red stop signs of "SCOTCHLITE" command attention

REFLECTIVE SHEETING

Now! You can make the switch to America's new stop sign standard* quickly, easily and at low cost. Signs of "Scotchlite" Sheeting give maximum brightness and visibility to shape, color, and legend 24 hours a day in all kinds of weather. *Here are 3 ways to do it!*

1. Buy the Ready-Made Alred-101. A finished sign faced with Wide Angle Flat-Top "Scotchlite" Reflective Sheeting. The ALRED-101 is mounted on 61S-T6, .081 aluminum, makes a sturdy, easy-to-maintain sign. 24", 30", or 36" sizes.

2. Buy Ready-to-Mount Sign Faces. Prepared faces of Wide Angle Flat-Top "Scotchlite" Sheeting come ready to apply to sign blanks in your vacuum applicator. Screened with BPR-standard shape, color, legend. A 24" face costs as little as $3.40.

3. If You Make Your Own! Use Wide Angle Flat-Top silver "Scotchlite" Sheeting and silk screen with "Scotchlite" No. 712 Stop Sign Transparent Red.

*See revisions to the Manual of Uniform Traffic Control Devices, Sept., 1954. Part 1, Section 29.

Complete details on reflectorized red stop signs upon request. Write Dept. AC.65, Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

WIDE ANGLE FLAT-TOP®

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SCOTCHLITE

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REFLECTIVE SHEETING

The terms "Scotchlite" and "Flat-Top" are registered trademarks of Minnesota Mining & Mfg. Co., St. Paul 6, Minn. General Export: 99 Park Avenue, New York 16, N. Y. In Canada: P. O. Box 757, London, Ontario.

3M

Requirements of a Housing Ordinance

(Continued from page 148)

sharing of bathroom facilities by the occupants of two small dwelling units provided not more than a certain limited number of persons use these facilities. There is precedent for limiting this number of people to a total of four, not including children under the age of one. This should not be construed to require more than one bathroom per each dwelling unit if there are more than four people in the family.

The above-mentioned facilities should be properly connected to both hot and cold water lines and every dwelling unit should be supplied with water heating facilities capable of producing an adequate supply of hot water with a temperature of about 120° F. All plumbing facilities should be properly and safely installed and connected to approved water and sewerage facilities as necessary.

There should be a requirement for the provision of adequate rubbish and garbage storage and disposal facilities. The details of these facilities may properly be set forth in the rules and regulations.

If no ordinance or code in the community contains a provision referring to safe, unobstructed means of egress leading to safe and open space at ground level, the housing ordinance should contain such a provision.

Light, Ventilation, and Heating Requirements

The housing ordinance should establish minimum standards of window and openable window area for each room. While this varies from place to place, accepted minimum standards for such provisions require about 10% of the floor area in window area and about one-half that amount in openable window area.

Each dwelling unit should have heating facilities which are capable of adequately and safely heating all habitable rooms, including bathrooms and water closet compartments to a temperature of about 70° F. The ordinance should state the conditions under which this temperature should prevail such as 3 feet above the floor in the center of the room at ordinary minimum winter temperatures.

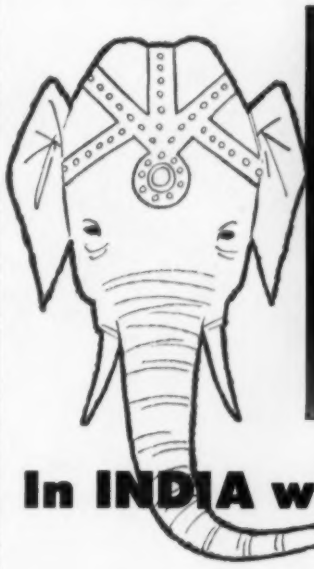
Halls and stairways should be adequately lighted. These lighting facilities should be capable of providing illumination of at least 1 foot-candle at the floor or step level under either day or night conditions.

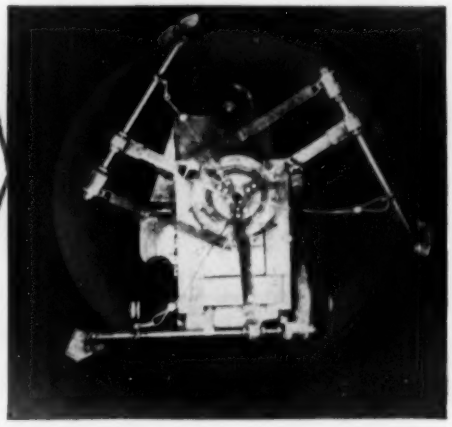
The ordinance should also contain a provision requiring one or more electric outlets in each room for dwellings within a reasonable distance of electric power lines.

Safe and Sanitary Maintenance Requirements

A good housing code should contain provisions requiring the various elements of the structure such as foundation, floors, walls, ceiling, and roof to be reasonably weather-tight, water-tight, capable of affording privacy, and in good repair. Windows and exterior doors should be reasonably weather-tight, water-tight, and kept in satisfactory working condition and in good repair. Inside and outside stairs and porches should be so constructed and maintained as to be safe and capable of supporting the normal or intended load, and should be kept in satisfactory condition and repair.

Plumbing fixtures and waste pipes should be properly installed and maintained and kept in good working condition. Floor surfaces, es-





In INDIA with CENTRILINE

On the coast of India, the Burma-Shell Refining Company has used the Centriline process on over 21,000 feet of sea-water cooling pipe. Through Centrilining, a cement-mortar lining is centrifugally sprayed on the pipe walls. Corrosion and tuberculation are eliminated . . . pumping costs are lowered . . . flow is increased . . . maintenance becomes negligible . . . and pipe life is extended indefinitely. This particular project in Bombay called for the Centrilining of 32" I.D. and 36" I.D. new steel pipe with 5/16" lining. But Centrilining works wonders in old pipes as well—with a minimum of surface traffic interruption. Proof of the pudding is in our files—the ever increasing number of repeat contracts from municipalities, industries and contractors. Why not follow their lead. Look to Centriline to rejuvenate *your* water supply systems.

Lummus Company, India, was engineer and constructor on this project. Asiatic Petroleum Corp. was buyer for the owner.

CENTRILINE CORPORATION

A subsidiary of the Raymond Concrete Pile Company

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Branch Offices in Principal Cities of the United States and Latin America

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NEW HOME of MI-CO Parking Meters

MICHAELS PRODUCTS:

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In this modern, highly functional structure, improved manufacturing facilities and streamlined assembly operations enable Michaels to meet the increasing demand for MI-CO Manuals and MI-CO Twin Automatic Parking Meters, and to give fast delivery on new meters and parts.

MI-CO Parking Meters have long been recognized as tops in the field. Their enviable record for dependable operation over long periods of time, under the most adverse weather conditions, and their consistently high earnings, have earned unqualified official endorsement wherever installed.

For proof of MI-COs' reliability, we suggest you check the records. When you have compared them with those of other makes, we are confident your choice will be MI-COs whether you plan an entirely new installation, replacing worn out or less efficient meters, or adding to your present meters. We'll be glad to send you details on constructional features and performance records of both types of MI-CO Parking Meters. Send for this information, and learn why MI-COs are better.

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KY.

(*The Michaels Art Bronze Co., Inc.*)

pecially in bathroom and water closet compartments; should be reasonably impervious to water and kept in a clean and sanitary condition. All supplied facilities, equipment or utilities should be so constructed and installed as to function safely and effectively and should be maintained in satisfactory working condition.

All housing ordinances should contain a provision relating to the ratproofing of dwellings and in those areas where flies and mosquitoes are either a significant health or nuisance problem screens should also be required.

Space and Occupancy Requirements

The housing ordinance should establish standards for total space and sleeping space in the dwelling based on the number of occupants. The American Public Health Association's "Proposed Housing Ordinance" suggests the following: 150 square feet of total habitable floor space for the first person and 100 square feet of floor space for each additional person; and 70 square feet of floor space for the first person in each room used for sleeping purposes and 50 square feet of floor space for each occupant when more than one person occupies a sleeping room. It should be noted that the required sleeping space need not be restricted to rooms designated as bedrooms.

Most housing ordinances specify a minimum acceptable ceiling height of 7 feet or more, and allow about one-half of the required floor area to be under a sloping ceiling with a clear height of 5 feet or more. The ordinance should also establish standards governing occupancy of rooms partially below grade.

Assignment of Responsibility

The ordinance should contain a section assigning the responsibility to owners or occupants as appropriate, for maintaining the dwelling in a clean and sanitary condition; reasonably insect free and rodent proof; proper use of garbage and rubbish storage containers or disposal facilities; reasonable care and proper use of plumbing fixtures; and the hanging of screens and screen doors if there is such a requirement.

As a general principle, responsibilities are assigned to the occupant if he has exclusive use or control of such facilities, fixtures, or equipment. Otherwise, the responsibility is assigned to the owner of the dwelling.

A good housing ordinance should

pH Correction
Rapid Floc Formation
Economy
Taste and Odor Control
Turbidity Removal
Ferri-Floc
FERRIC SULFATE
Color Removal
Manganese and Silical Removal
Softening
Ease of Operation
Bacterial Removal
Water . . . Pure
and Fresh as a Daisy . . .
Ferri-Floc
the Superior Coagulant!
You can readily see why the many users of Ferri-Floc consider it the superior coagulant. Whatever your specific water treatment problem may be, you can figure on Ferri-Floc to do the job adequately, efficiently and economically. A partially hydrated ferric sulfate, Ferri-Floc is a stable, free-flowing granular salt which can be fed with few modifications through any standard dry feed equipment. It is only mildly hygroscopic, thereby permitting easy and safe handling, as well as storage in closed hoppers over long periods of time.
Water Treatment
Efficient coagulation of surface or well waters. Aids taste and odor control. Effective in lime soda-ash softening. Adaptable to treatment of nearly all industrial waters.
Sewage Treatment
Efficient coagulation over wide range of pH values encountered in sewage treatment. Especially adapted for conditioning of sludge prior to vacuum or drying on sand beds.
TENNESSEE CORPORATION
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SULFUR-DIOXIDE
SO2
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SULFUR-DIOXIDE is effectively used for dechlorination in water treatment and to remove objectionable odors remaining after purification.
COPPER SULFATE
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COPPER SULFATE will control about 90% of the microorganisms normally encountered in water treatment plants more economically than any other chemical.
Free New Booklet!
Let us send you without charge a 38-page booklet that deals specifically with all phases of coagulation.
Send postal card.

have a provision concerning the

be appropriate to include this item

APHA. In general, rooming house

The Super 55 offers diesel or gasoline engine. Equipment shown is Oliver No. 27 side-mounted mower.

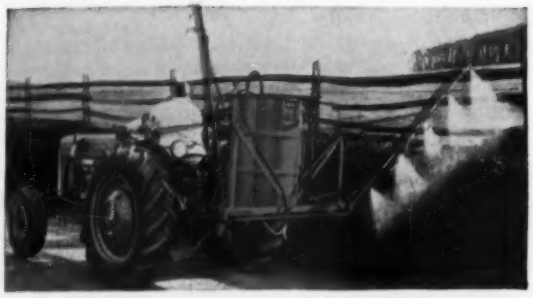
In features, versatility... OLIVER SUPER 55 is years ahead!

From every angle, this new Oliver is years ahead in power, flexibility, handling ease and utility than any tractor of comparable size!

Only the Super 55 gives you a choice of two engines —diesel or gasoline. You pick the one that fits your work the best, saves the most. You pick the equipment you want, too—3-point hitch, front or side mounted. Built-in hydraulics operate all three types.

The Super 55 is low and compact, built to the size that lets you work anywhere. Its light-handling ball-type steering and double-disc brakes make maneuvering in tight quarters easy. And with six forward speeds —five working speeds, one road speed—you select the gear for each job, do more on less fuel than ever before.

You'll be surprised at the low price of this years-ahead tractor. Why not try the Super 55 yourself? Phone or visit your Oliver Industrial Distributor for a demonstration.



Here is the Super 55 with 3-point hitch Oliver Iron Age weed sprayer. Oliver also offers many other mounted and pull-type sprayers.

3-point hitch scraper operates from built-in hydraulic system. 1000 pound front loader is controlled from front-mounted hydraulic pump.

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

OLIVER

Figure The Job Lower If You're Using A

have a provision concerning the designation of dwellings unfit for human habitation, and set forth a procedure for their condemnation and placarding. As a general principle, such condemnation should be based upon serious hazards to the health or safety of the occupants and these hazards should be stated in the ordinance. This section should also set forth the procedure for removal of the placard and reoccupancy of such dwellings. In that connection, I suggest you refer to Section II of the "Proposed Housing Ordinance" of the APHA.

Experience with housing ordinance enforcement shows that some dwellings that are unfit for human habitation may remain vacant but not rehabilitated or demolished. In that case they continue as a blighting influence in the neighborhood and as such constitute a problem to area-wide improvement. This, with the similar case of the nonconforming zoning use, remains a substantially unsolved problem in the drive to improve neighborhoods. When the technical, legal, and administrative solutions to the problem of the vacated, but not demolished, slum dwellings are obtained, it may well be appropriate to include this item in the housing ordinance.

The use of rooming units is sufficiently different from the use of dwelling units to justify a reasonable basis for classification and establishment of different but related standards. A recognized guide for such standards may be found in the "Proposed Housing Ordinance" of the APHA. In general, rooming house standards should be included as a separate section in the housing ordinance. The applicability of such standards to hotels and similar accommodations should be defined in accordance with state law.

NOTE: See comment by Huntington Williams, M.D., Commissioner of Health of Baltimore, page 7 of this issue.

M.I.T. Announces Summer Planning Seminars

A TWO-WEEK Summer Program in City and Regional Planning will be given in the School of Architecture and Planning at the Massachusetts Institute of Technology from August 22 through September 2, 1955. The course will offer studies designed for persons directly concerned with urban or regional development, including men and women in the fields of building, investment, and industry, as well as for practicing professionals and members of planning staffs.

The planning seminars are to discuss modern concepts of planning; public relations techniques; urban renewal; industrial location; freeways, transit, and off-street parking; a planning program for a metropolitan area; zoning law and administration; population surveys and forecasting; long-range programming of public works; and planning outside the United States. The seminars will be under the direction of Frederick J. Adams, Professor of City Planning. Tuition is $100.

Credit to Bureau of National Affairs

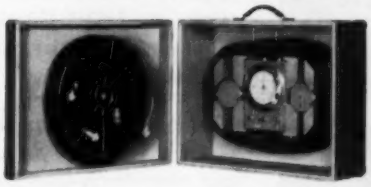
The story on industrial water demands which appeared on page 120 of the May issue was based on information gathered by the Bureau of National Affairs, 1231 24th St., NW, Washington, D. C.

TRAFFIC TIMER---
The Newest in Accurate
SPEED CONTROL!

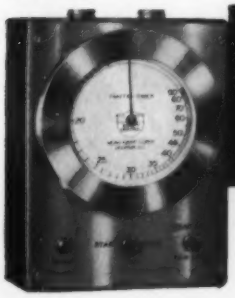
STOP SPEEDING!

Promote CAUTION among drivers!

Drive accident CURVE downward!



Traffic - Timer is self-contained in a lightweight fitted case for easy carrying. Cables wind on built-in free running reel with handle. Times traffic in either direction; one-way operation needs only one man. Large dial for easy reading; lighted for night operation. Switch provides selectivity of vehicle to be timed. Powered by battery or car cigar lighter. 60 ft. road tubes. Signs available which will make motorists of your city more safety conscious.



Traffic Timer
SAFETY CONTROL

ENGINEERED WITH ALL THE FEATURES NECESSARY FOR EFFECTIVE SPEED CONTROL

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1451 W. Decatur Decatur, Ill.
Write for descriptive literature.

Figure The Job Lower If You're Using A LoDaL TRUCK SELF-LOADER

You'll Need Less Equipment

You'll Need Fewer Workmen

You'll Save Man and Equipment Hours

And the versatile LoDaL will cost you a fraction of the price of single-purpose loaders.

NEW GRAPPLE BUCKET for the LoDaL takes a ¾-cubic-yard bite out of a pile or stockpile and closes tight by hydraulic power. The LoDaL grapple bucket gets a full load without pushing the pile, making the unit especially useful for picking up street sweepings and leaves. As the grapple closes, the cutter bar scrapes the ground 12 inches ahead of the grapple dip, drawing the

LoDaL TRUCK SELF-LOADER

will fit any truck to do hundreds of jobs efficiently, quickly. It will dig, load, carry, grade, backfill, sweep, collect refuse, pick up piles of leaves, and remove snow. The multi-purpose LoDaL will handle costly operations at a fraction of the cost of other methods. And always—one machine and one man do the job.

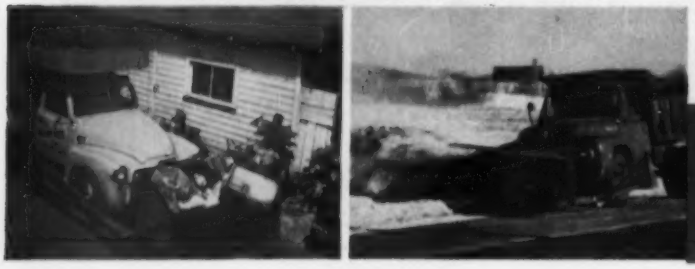
The basic LoDaL machine is a powerful loader with a lifting capacity of 3,000 pounds. Built to safely absorb all the thrust your truck is able to give, the LoDaL has plenty of pull-out power to maintain a fast loading speed, digging out a full bucket every time.

The load swings overhead in a smooth arc under continuous hydraulic control. The operator controls the loading with a single lever in the truck cab.

Offering unmatched economy in short haul and scattered yardage operations, the LoDaL will outperform on many jobs any wheel tractor loader available.

STOCKPILING AND NATURAL BANK LOADING are routine work for the sturdy, powerful LoDaL. Hydraulic power, controlled from the cab, lifts the big bucket overhead to self-load a 5-yard truck body in 2½ minutes. LoDaL can load sand, gravel, crushed rock, ashes or refuse.

LoDaL ATTACHMENTS convert the basic LoDaL machine into a self-loading REFUSE COLLECTOR, STREET SWEEPER, LEAF COLLECTOR, SNOW PLOW, or SNOW LOADER. Unskilled workmen can change attachments in minutes.



Multi-Purpose LoDaL Hydraulic Truck Self Loaders

LoDaL, Inc.

Norway, Mich. • Mars, Penna.

Eau Claire, Wis., Adopts New Electrical Code

A BROADLY conceived electrical inspection code has recently been adopted by the Eau Claire, Wis., city council, reports City Manager David W. Rowlands. The seven-page ordinance establishes a position of Electrical Inspector and a Board of Electrical Examiners to administer the code; sets up procedures for licensing electricians and electrical contractors; requires the issuance of permits for electrical installations, repairs, and alterations; and sets forth standards of work and installation methods.

A schedule of license fees for electricians is established, as is a schedule of permit fees for the installation of various electrical equipment. All electrical contractors are required to file a surety bond of $1,000 with the city to cover any failures by the contractors to comply with the requirements of the new Eau Claire ordinance. Public liability insurance of $20,000 for property damage and an equal amount for death or personal injury is required for each contractor. The Electrical Inspector is given authority to enter any building or premises at any reasonable hour to inspect any wires or equipment.

Among the complete list of standards for wiring and installation methods is the following:

> In every kitchen, dining room, breakfast room, living room, parlor, library, den, sun room, recreation room, and bedroom, one receptacle outlet shall be provided for every 20 linear feet or major fraction thereof of the total (gross) distance around the room as measured horizontally along the wall at the floor line. The receptacle outlets shall, insofar as practicable, be spaced equal distances apart. At least one receptacle outlet shall be installed for the connection of laundry appliances. Receptacle outlets in floor shall not be counted as part of the required number of receptacle outlets unless located close to the wall.

Continued Growth of the Municipal Authorities Movement in Pennsylvania

THE Pennsylvania Municipal Authorities Association reports that over 900 municipal authorities have been incorporated in that state since 1935. At the end of 1954, authorities had 567 projects in operation, including 121 water works, 328 school projects, 85 sewer projects, 8 airports, 14 parking projects, 10 buildings, and 1 flood-control project.

Self propelled Mark-Rite Tandem Liner, model 8088 with reflecting bead hopper shown, available with single or double line attachment.

IF YOU'RE THINKING OF BUYING A LINE MARKER

then you can profit by the experience of thousands of Mark-Rite users

- Look for the vertical paint tank, independent from air reservoir; we don't use the horizontal type even though it's cheaper, because the paint might back up into the compressor.
- A large quick-release tank opening is a must for rapid reloading and the whole tank must be removable for easy cleaning.
- Make sure you get ample compressor capacity. Mark-Rite units have a generous reserve of horsepower and air.
- Check the location of the gun; it should be at the pivot point to maintain line width on turns. Can it paint cross walks right up to the curb? Ours can.
- See that you get an automatic type gun (we use the best that is made by the largest manufacturer of road striping guns), and don't overlook the strainer.
- Size up your work load, we have the greatest selection, from small push types to large self-propelled sizes of road marking equipment, and can steer you rite.
- Mark-Rite liners will handle all types of road marking paint including reflective pre-mix or binders for drop-on beads. They can be connected quickly to standard spray gun for stencil work, fire hydrants, benches, etc.
- It all adds up to a greater economy in your entire road marking program. There are over 19,000 satisfied users to confirm it.
- Get in touch with your local supply house or write to the factory and ask for a demonstration.

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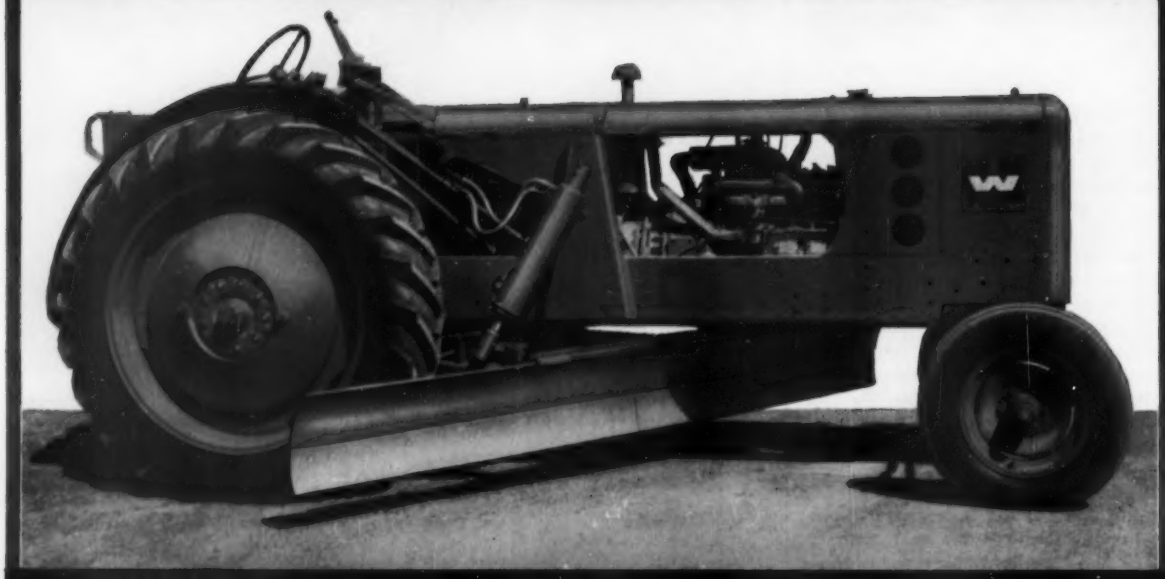

NOW WITH TORQUE CONVERTER

The newly designed Huber-Warco Maintainer, with torque converter, is truly a versatile machine. Construction and highway maintenance problems are handled quickly and efficiently with the Maintainer.

This sensational performer will out-perform many machines that are larger, heavier, more costly, slower, more expensive to operate, and more limited in use.

With hydraulically controlled attachments, the Huber-Warco Maintainer will perform service as a bulldozer, lift-loader, side dozer, berm leveler, broom, patch roller, mower or snow plow.

See A Demonstration of These Important Features

- 45½ H.P. — with plenty of reserve strength for the toughest jobs.
- Torque Converter — reduces shock loads — prolongs the life of the machine. Picks up and carries loads smoother and faster.

Automatically adjusts vehicle speed to meet varying load conditions.

Engine won't stall — regardless of grade.

- All controls within easy reach of the operator.
- Weight of 6250 lbs. — 7205 lbs. with calcium chloride in tires. Enough weight for all maintenance jobs.
- Working speeds range from 1.7 to 8 m.p.h. Travel speed is 21 m.p.h. for quick movement from job to job.
- 9' Power Sliding Moldboard is standard.
- Hydraulic controls govern movement of the blade and all attachments.

SEE YOUR NEAREST HUBER-WARCO DISTRIBUTOR

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Road Machinery

CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

Menasha Pulls Switch

(Continued from page 155)

mills to a low of 9.07 mills for a reduction of about 26%.

Encouraged by these results the city put in its order to Worthington Corporation for a 7,500-kw turbogenerator, complete with accessories, and for a 7,000 square-foot surface condenser with auxiliaries. This addition will help keep the Menasha utility ahead of the load placed on it by its 12,300 residents.

The possibility of the need for this third unit was anticipated in the engineer's design, which provided ample room for future equipment. The steam units are housed in an attractive, light-colored brick building. Steam is generated in two 60,000-pound-per-hour, three-drum Wickes bent-tube boilers, operating at 625 pounds of pressure. The boilers are spreader-stoker fired and have a superheater outlet temperature of 750°F.

Boiler Efficiency

Maximum boiler operating efficiency is insured with an automatic combustion-control system which provides a parallel system of control. Fuel feed and forced draft are regulated simultaneously and in parallel, in accordance with the load changes indicated by changes in steam pressure. The induced draft is regulated automatically to maintain furnace draft. After a change, the forced draft is readjusted to maintain the desired fuel-air ratio. The main switchgear was provided by Westinghouse.

Coal arrives by rail and is dumped from hopper-bottom cars into a track hopper. From the track hopper, it is conveyed by belt either to the boiler bunkers or to the outdoor storage pile. A bulldozer, because of its compacting effect, successfully eliminates the danger of spontaneous combustion in the handling of the storage pile. When it reaches the boiler bunkers, the coal drops by gravity to the coal scales and then to the stokers.

The two 4,000-kw turbines are of the condensing-extraction type and operate at 3,600 rpm, using 600 pounds of steam at 750°F. Exhaust, at 28 inches of vacuum, is to a 4,000-square-foot, two-pass surface condenser. Generator output is rated at 5,000 kva; power is generated at 4,160 volts.

Cooling Water

Condenser cooling water is taken from nearby Fox River and circulated by a Worthington horizontal centrifugal pump rated at 8,500 gpm and a 50-hp, 4,000-gpm Allis-Chalmers centrifugal pump. An additional Allis-Chalmers 2,500-gpm, motor-driven pump and a 1,500-gpm steam turbine-driven pump are available for light load conditions. Four stages of feed-water heating are used: the second is a deaerating feedwater heater; the others are of the closed shell-and-tube type made by Whitlock. Under occasional light loads, the first stage is bypassed. The condensation tank is a product of the Graver Tank & Manufacturing Company.

At 3.5 cents per kwhr for the first 100 kwhrs used, the city's residential electric rate is one of the lowest in the state. The water heating rate is a flat 1.25 cents per kwhr.

Since 1952, total kwhr production has increased 12.27% in Menasha. Undoubtedly, the load curve will continue to rise. However, with its efficient steam-power plant in service augmented by the capacity that will be available from the new turbogenerator, Menasha is more than ready to meet the challenge.

YOU CAN DEPEND on MB MARKERS

...to lay more lines—faster, better and at lower cost

MODEL 618 — Fast, versatile, low-priced — marks curved or straight lines, 18 gal. capacity with travel speeds 3 to 5 miles per hour.

MODEL 16 — All-purpose, self-propelled utility marker. Available with 18, 30, or 36 gal. capacity. Lays single or double lines, 2" to 6" wide.

SIMPLE, compact design — rugged, sturdy construction — make M-B Markers tops for dependable, accurate line marking service day after day.

Handle scores of line marking jobs — marking roads, streets, parking areas, parks, recreation areas and loading zones. Versatile, small M-B Markers adaptable as portable spray units — for curbs, park equipment, furniture, fences, etc.

Choose from a wide selection of hand-propelled and self-propelled models — equipped to lay single or multiple lines — in one or two colors — solid or intermittent.

- **Largest strainers**
- **Standard Make Guns**
- **Easiest-to-clean**
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THE FOUR WHEEL DRIVE AUTO COMPANY, CLINTONVILLE, WISCONSIN, *Canadian Factory,* KITCHENER, ONTARIO

More Letters to the Editor

(See also Mail Bag, pages 5 and 7)

A Conveyor Instead Of a Shuttle

The New York City transit system includes all the rapid transit lines in the city, all the surface lines in Brooklyn and Staten Island, about half of the surface lines in Queens, and five bus lines in Manhattan.

Few resident New Yorkers have any idea of the size of this system. The rapid transit lines alone carried three times as many passengers as all the Class I railroads in the United States. We operate 6,734 passenger cars on the rapid transit lines; 2,141 buses and 300 trolley cars and trolley coaches on our surface lines. The estimated cost of reproducing the system today is over $4,000,000,000.

The original subway, which went into operation in 1904, ran north from City Hall up the East Side to 149th Street, with an addition under 42nd Street to Broadway and up Broadway. New lines were soon constructed. One of these was an extension south from 42nd Street under Seventh Avenue, and is now the West Side Line of our IRT Division. This has been referred to as "completing the H." The shuttle became the "cross bar of the H" connecting the East Side and West Side IRT Lines, with access to the Broadway Line of the BMT Division at Times Square.

The shuttle is one of the more heavily used sections of the transit system, carrying over 60,000 people per day in each direction. We now operate 10 cars on three of the four existing tracks between Times Square and Grand Central. The four tracks vary somewhat in length, the average being 2,580 feet. What kind of a conveyor system would be practical?

We have designed a model on a scale large enough to carry passengers, a conveyor I have developed with the engineers of the Goodyear Tire and Rubber Company and the Stephens-Adamson Manufacturing Company. Passengers at the stations will walk onto the loading belts moving at 1½ mph. Seven-foot square, 10-seat passenger cars ride on a belt parallel to and moving at the same rate of speed as the passenger loading belt. Nineteen cars would pass the loading area every minute. Passengers step from the loading belt into an empty car moving at the same speed as the loading belt. Once clear of the loading area, the passenger cars are rolled for about 75 feet over a bank of rubber-tired accelerator wheels which step up their speed to 15 mph.

No other plan or system of moving belts for passenger transportation, in our opinion, compares with the merits of this design to meet requirements for safety, economy, and efficiency. It has been approved by the New York City Transit Authority and is presently before the Board of Estimate of New York City for approval.

S. H. Bingham
Executive Director & General Mgr.
New York City Transit Authority
New York 13, N. Y.

Traffic Paints

Traffic marking paints are formulated to meet several different requirements. Some cities are interested only in a low cost, and purchase solely on this basis. Other cities employ a specification stating the composition of the traffic marking paints. Here the manufacturer has little or no choice as to the quality, since the composition is mandatory.

Test stripes like these in Cleveland, Ohio, help the city evaluate traffic paints before purchase.

Some of the more progressive cities are instituting field tests evaluating traffic marking qualities prior to purchasing. In such cases, samples are requested a year before the paints are actually purchased and only suppliers whose samples satisfactorily meet the service conditions specified will be invited to bid.

These are just a few of the variations that we find in this market and I thought they would be of interest to your readers.

A. Brolin
Technical Manager—Bid Sales
The Sherwin-Williams Company
Chicago 28, Ill.

Fund Director Gives Credit to Chapter Authorship

We are pleased to see in your May issue the material on urban redevelopment [Urban Redevelopment: A Second Chance and What It May Cost," p. 138] excerpted from our report "America's Needs and Resources: A New Survey." This particular excerpt came from the chapter written by Lawrence N. Bloomberg, Chief Economist, Public Housing Administration; Howard G. Brunsman, Chief, Population and Housing Division, Bureau of the Census; and A. Benjamin Handler, Associate Professor of Planning, University of Michigan; and we hope you may be willing to print this note giving proper credit for authorship. The authorship you carried—J. Frederic Dewhurst and associates—is correct for the study as a whole, but Mr. Bloomberg, Mr. Brunsman, and Mr. Handler, among the associates, wrote this individual chapter.

J. Frederic Dewhurst
Executive Director
The Twentieth Century Fund
New York, N. Y.

Newspaper Presents Resume of City Finances

The City of Manhattan Beach, Calif., is fortunate in having the effective cooperation of our tabloid newspaper, *The Tide of Manhattan*, in explaining to the citizens the current status of city finances on a given date.

This report occupied a full page in *The Tide* of April 29, 1955. The statistics were tabulated under three headings: Where the Money Comes From; Where the Money Goes; and How Much Have We Got.

There has been considerable citizen interest in the "resume," and I believe that the editor who published it as a public service has made a distinct contribution to citizen information, and upon a subject that is normally considered to be too complex and dry for public consumption and understanding.

Leland M. Swanson
City Manager
Manhattan Beach, Calif.

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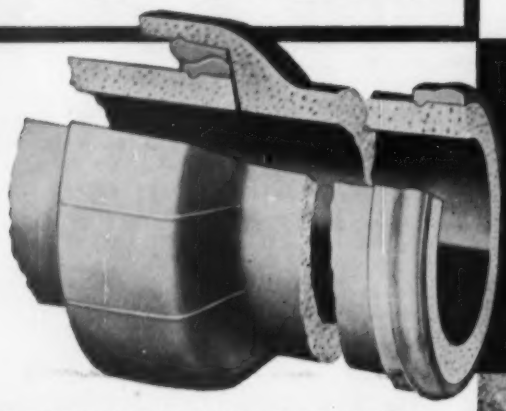
the tightest, fastest-working joint ever developed for bell-and-spigot Clay Pipe!



New Wedge-Lock* by ROBINSON

PERMANENTLY BONDED DOUBLE-BALL JOINTS ON BELL AND SPIGOT "SNAP" TOGETHER FOR A PERMANENT, LEAK-PROOF SEAL!

Soon anyone will be able to make perfect Clay Pipe joints — easier and faster than ever before! Installing Wedge-Lock is simply a matter of lubricating the plastic joints with water, graphite solution, or Robinson's special adhesive sealant — and pushing them together. The "double-ball" type joint locks pipe in place . . . and is permanently *root-proof* and *infiltration-proof*.

This new pipe can be installed not only in regular house-to-sewer lines, but inside plastered walls and under basement floors. For inside-the-house installations, where "head" pressures are encountered, Robinson's special adhesive sealant is recommended. It softens the two jointing surfaces, welding them into a single, solid ring.

This new polyvinyl plastic joint, combined with never-wear-out vitrified clay, will form the *perfect* team . . . pipe that can be installed in seconds to last for generations!

A complete line of matching Wedge-Lock Fittings is available.

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Just paint the bell joint with lubricant . . .

Paint the spigot joint the same way . . .

Push the pipe together . . . the joint is complete!

THE ROBINSON CLAY PRODUCT CO.
ESTABLISHED 1856
AKRON 9, OHIO

WRITE FOR the new Wedge-Lock Clay Pipe Bulletin, a four-page file-sized brochure with complete, advance information on this new product. Address: The Robinson Clay Product Company, 65 W. State St., Akron 9, Ohio.

R 254-70

Community Foundations—

The Growth of an Idea

By ARCH MANDEL
*Executive Secretary, National Committee on Community Foundations**

WHEN Bryan Mullanphy, set up a trust fund in St. Louis for the benefit of "stranded emigrants going West in covered wagons", the fund was a logical one . . . for the year 1851. And New York's Snug Harbor Fund once served a purpose too . . . when it aided "stranded sailors before the mast."

Today's bequest of a large sum of money to endow some special research project answers, without question, a present-day need. So does the fund to establish and maintain an organization to serve the particular needs of a particular group of people. But, 75 years from now the dread disease may be conquered and the special research no longer needed. The playground endowed in perpetuity may be surrounded by factories and completely isolated from any residential district it might serve. Dead hands would be holding resources that might be working to serve living needs.

It took 30 years of expensive litigation to divert the Mullanphy Fund to more essential purposes, once the covered wagon had disappeared from the overland trail. Litigation could divert today's bequest when it becomes outmoded too; but why run the risk of paralyzing funds that might be working for the common good?

Growth of an Idea

An idea has been growing, slowly but surely, through the years in answer to this question—an idea that avoids the "dead hand" control of monies intended for charitable purposes, several weeks ago (April 21-22) this idea was spotlighted in Spartanburg, S. C. The sixth annual meeting held there by the National Committee on Community Foundations brought together representatives from more than 50 cities and towns. They exchanged ideas about community trusts and/or foundations and discussed the experience of some 110 such organizations now in existence in America. They brought out the fact that community trusts and foundations have made many contributions toward well-rounded community planning for local health and welfare services.

The American Community Trust or Foundation idea originated more than 40 years ago in Cleveland, Ohio. It grew out of a need for a better use of capital funds available for community welfare than could be obtained from scattered and rigid endowments. The Cleveland Foundation was established by Declaration of Trust adopted by the Cleveland Trust Company on January 2, 1914.

Declaration of Trust

Under this declaration, the Trust Company offered to accept gifts, grants or bequests *in trust* for the common good, the welfare primarily of the people of Cleveland. The bank proposed to administer the principal of such gifts or bequests. The authority to select beneficiaries or to determine by what means or through what agencies community welfare might best be promoted was to be vested in a Distributions Committee. This committee was to consist of five Cleveland area citizens selected for the understanding of community needs. Three of these would be appointed by certain designated public officials, two by the trustee bank.

The committee was to have "absolute and uncontrolled discretion, subject to the terms of any gift, to appropriate the entire net income and portions of the principal as available for the Foundation's charitable purposes." These purposes were to be as broad as the legal definition of charity . . . to include education and culture, scientific research, recreation, and other measures for the promotion of health, morals, and social welfare. Members of the committee were asked to serve without compensation but reasonable expenses (secretarial, investigation, research, etc.) of the committee were to be paid from net income of the trust.

In the 41 years that have gone by since the inauguration of this first Community Trust, approximately 110 have been organized in the United States and Canada. They have an aggregate capital of over $120,000,000 and annually distribute over $6,000,000.

Most community trusts or foundations were organized on the Cleveland model under Declarations of Trust. There has been, however, a gradual shift from the single form of trusteeship to the multiple form. The New York Community Trust made this departure from the Cleveland plan when several banks joined in adopting a new type of Declaration of Trust and set up a Trustee Committee to take over certain responsibilities before exercised by single trustee banks. Incorporation under state charter has been favored in some instances but, in general, the basic principles of the plan of the Cleveland Foundation have usually been maintained.

Basic principles of a community trust or foundation always involve two major and distinct functions. Management of the estate or trust fund is one. This involves collection, custody, conservation, investments, and accounting. Second is the management of the charitable activities and disbursements. This latter function concerns proper application of funds for the best accomplishment of each fund's purpose and the best interest of the community. The mutual cooperation between trustee and committee works to the advantage of all.

Foundations and Their Locations

Where are community foundations? They are to be found in both large cities and small. The Chicago Community Trust was organized in 1915, the Glen Falls Foundation in 1939. The New York Community Trust was established in 1920. Peoria's founding date was 1918. Boston, Los Angeles, St. Louis, Milwaukee, and Spokane did their organizing in 1915. The 1920's added, among others, Portland,

* 345 East 46th Street, New York 17, N. Y.

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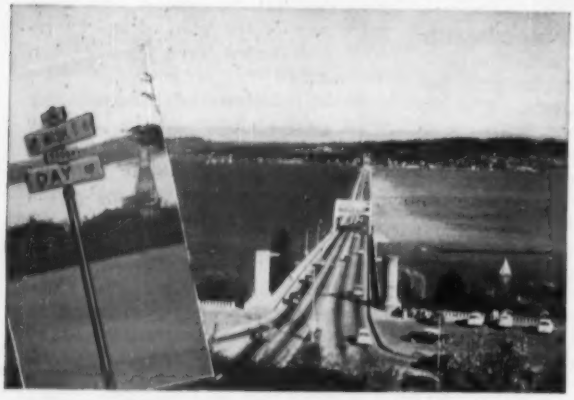

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With a Trojan, no resetting of grip is required—job goes twice as fast. Heavy duty, all steel construction makes it 4 times stronger than cast iron pusher.

Model A needs only 5 ft. trench. One man can easily lift it in and out of trench and install the average service. 15 tons of pushing pressure possible.

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Sometimes criticized as being primarily a large city enterprise, the community foundation actually finds its best expression in relatively small communities. Its emphasis on local community enterprise, community planning for progress, local self-help and self-reliance finds fertile soil in the small town. In proportion to population, such smaller cities as Spartanburg, S. C., Centralia, Ill., Beloit, Wis., and Williamsport, Pa., have community foundations surpassing many larger cities in volume of active capital and in quality and range of community service.

An Ideal Solution

The community foundation presents an ideal solution for the philanthropic individual who desires to leave a portion of his estate to charity but who does not know how to select a worthy recipient. It provides an answer to the questions that arise in the minds of those who have set up family foundations but who wonder how their wishes will be carried out after they and the directors they have selected are gone. It assures the donor that his estate will not be tied to a cause which may not need help in the future and promises him continued service of his bequest toward a useful purpose.

Uniting as it does the lifetime gifts and the bequests of many donors, in one really substantial foundation, the community trust or foundation provides the most good with the smallest administrative cost as well as the greatest investment protection. It appeals to the man or woman, who not having a great deal of money to leave to charity, sometimes might hesitate to mention any such bequest in a will. Through a community foundation anyone, even someone of moderate or modest means, can set up any memorial he may choose with the assurance that the gift will remain useful to the community for as long as the community shall exist.

An Example

A Winston-Salem, N. C., woman, employed in a factory as an unskilled worker, lived frugally all her life. In her later years she allowed herself only the necessities. Thus she accumulated modest savings. These she left, upon her death, to the Winston-Salem Foundation with instructions that the money be used for the benefit of churches in her city. The original gift was $2,000. The fund is now valued at $4,000. The Foundation provided this woman with a vehicle of perpetual giving to a purpose which meant much to her.

Under the Community Foundation plan, gifts or bequests may be made for the benefit of designated purposes. When this is desired, the gift is devoted to the particular charitable institution or object until such time as such charitable use, in the judgement of the Foundation, shall have become "unnecessary, undesirable, impractical, impossible or no longer adapted to the needs of the community." In any of those events the gift is then devoted to the general purposes of the trust.

Both Cleveland and Chicago have substantial funds for preventive research, and for care, treatment, and education of handicapped children. They spend approximately $100,000 a year in this way through hospitals and special children's agencies. Both have funds for care of the blind, the aged, for the development of group work and character-building activities for young people.

Another Application

Because Community Chest and United Fund dollars must be spent on the day by day operation of voluntary health and welfare services, Community Foundation monies are vitally important for the encouragement and improvement of agencies needing strengthening. They are needed to pay for special research and experimentation in the development of new services, to aid and support intelligent community planning and extension of community services as a whole. Boston, Buffalo, and Chicago foundations were especially active and played important roles in the development of their own local Councils of Social Agencies and Community Chests.

Although the Community Foundation idea developed slowly in its first 35 years, those years of experience, good behavior, observation, and testing proved the idea a sound one. In the last few years, more and more communities, eyeing the steady inflow of capital gifts and bequests to these established trusts and foundations, are adopting the plan for the welfare of their own communities. New community trusts or foundations are being organized at the initiative of councils of social agencies, community chests and united funds, chambers of commerce, local foundations, universities, colleges, bar associations, medical societies, and citizens who want to give capital in some permanently useful way. Many recently organized community foundations are making substantial progress under the volunteer executive directorship of Community Chest or Welfare Council executives or by executive directors of chambers of commerce. These demonstrate the possibility of organizing and developing a strong community trust or foundation as a true community institution even when funds for expenses are not yet available.

Social Welfare Planning

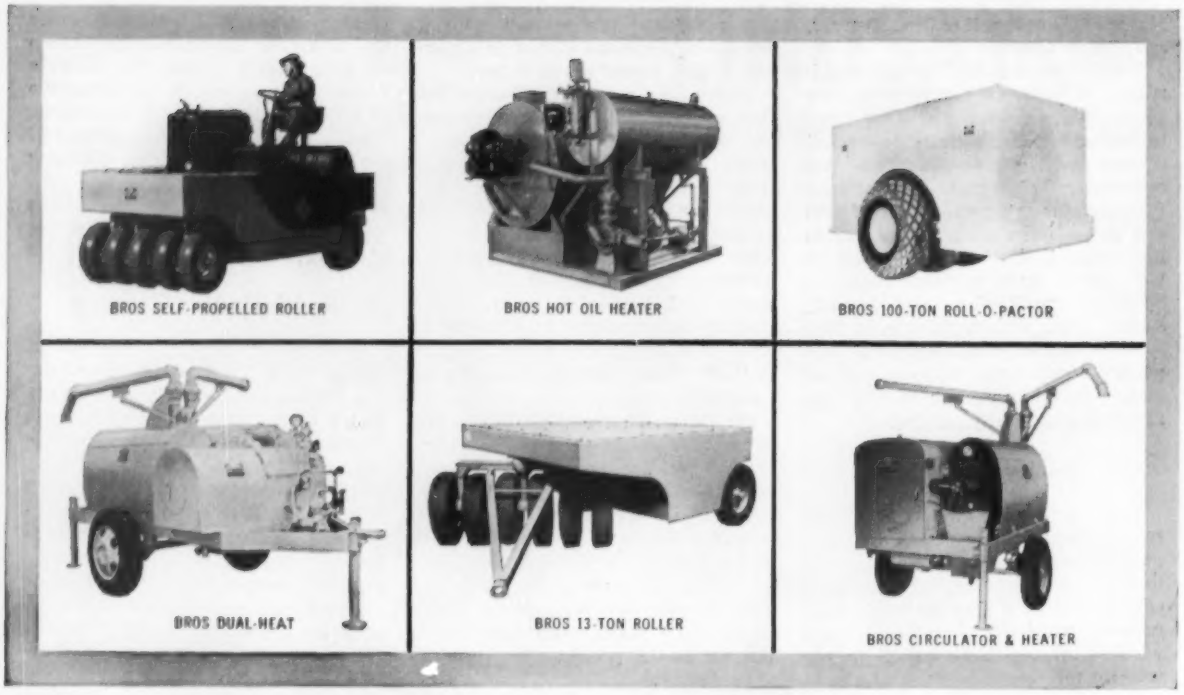
Edward L. Ryerson, chairman of the National Committee on Community Foundations says: "Community planning for health and welfare, in recent years, has been largely the work of local Community Chests and Councils and it has been restricted largely to current financing of current needs. Community planning for social welfare will never be well-rounded or comprehensive until it includes planning for capital gifts and bequests. These are likely to affect the character, the stability and adaptability of many of our community services over long periods of time."

The National Committee on Community Foundations, in its annual meeting this year in Spartanburg, S. C., continued in its purpose as a medium for exchange of experiences and as an aid in constructive action where it is desired. Participants in the program came from all parts of the nation and represented the interests of government, business, religion and social welfare.

"A Community Foundation is worthy of the total efforts of the entire population of a city or town," Robert M. Hanes of Winston-Salem told the assembled group. "It is the most effective method we know," he said, "to organize . . . the giving impulse of a community for the promotion and welfare of all of the people comprising the community."

Parklets in Pittsburgh

"PARKLETS" — pocket-sized play areas that combine "the esthetics of a park with the utility of a playground"—are described in the May 1955 issue of *Recreation* magazine as Pittsburgh's answer to the problem of recreation in congested areas. The small play areas are carefully designed to fit on vacant lots in densely developed neighborhoods. Of the 14 built thus far, the smallest has 7,500 square feet and the largest, 24,000 square feet. *Recreation* is published by the National Recreation Association, 8 W. 8th St., New York, N. Y.



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9 and 13-ton Rollers for base course compaction. These models are available in either straight wheel or the Wobble-Wheel design . . . which adds side-to-side weaving motion to the up and down oscillating axle motion of each wheel. Overlap of wide face tires actually provide full coverage in one pass.

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Special Restrictions for Existing Narrow Lots

MICHIGAN. *Robyns* v. *City of Dearborn*, 67 North Western (2d) 718 (Supreme Court, December 29, 1954).

In this case the local zoning regulations required a minimum distance of 10 feet between residences. When an attempt was made to apply this regulation to a group of 7 lots, each about 20 feet wide, the Court held that this was unconstitutional—rejecting an argument that the owners could comply by combining 2 or more lots for the building of residences thereon. There was no indication of the Court's attitude on such an argument if several of the lots were in common ownership. It appeared that the City was about to condemn the land for park purposes.

Public and Private Schools In Residence Districts

CALIFORNIA. *Roman Catholic Welfare Corporation of San Francisco* v. *City of Piedmont*, 278 Pacific (2d) 943 (District Court of Appeal, January 24, 1955).

In this case, the local zoning ordinance permitted public, but not private, schools in a residence district which comprised about 98% of the City's area. The Court held that such a distinction was an unconstitutional discrimination against private schools. The Court also stated that, although there was no need to consider such a case, a zoning regulation excluding all kinds of schools from a residence district "would seem to present a serious question." The Court therefore distinguished *Corporation of Presiding Bishop of Church of Jesus Christ of Latter-Day Saints* v. *City of Porterville*, 90 California Appellate (2d) 656, 203 Pacific (2d) 823, appeal dismissed, 338 U.S. 805 (1949) which upheld the exclusion of churches from residence districts.

School for Mentally Retarded Children in Residence District

NEW YORK. *Rogers* v. *Association for the Help of Retarded Children*, 123 North Eastern (2d) 806 (Court of Appeals, December 31, 1954).

A school for mentally retarded children was proposed in a residential district in Pelham Manor, where the zoning ordinance prohibited any "institution for the care of invalids or mental defectives." The lot in question had previously been used as a nonconforming use for a convalescent home for children from New York City being treated there for cardiac disorders, and for a school in connection therewith under the auspices of the New York City Board of Education. Neighboring property owners brought a suit to prevent the new establishment, on the ground that the presence of such retarded children in the neighborhood would depress both their moods and their property values. The highest New York Court upheld the proposed establishment, by a vote of 4 to 3.

In the opinion, use of the school for mentally retarded children was held to be a continuation of one of the two pre-existing, nonconforming uses, i.e., as a school. In view of the compulsory education laws, it was held that the care of such convalescent cardiac children necessarily included their education, and the opinion emphasized "the strong public policy of the State which favors the education of all children, however handicapped." Three judges dissented on the ground that the previous use was not really a school, and that the local ordinance explicitly forbade the continuation of a nonconforming use unless the new use was "identical" with the previous use.

School for Handicapped Children Not a Sanitarium —Special Yard Regulations

PENNSYLVANIA. *Walker* v. *Zoning Board of Adjustment of City of Philadelphia*, 110 Atlantic (2d) 414 (Supreme Court, January 6, 1955).

The Philadelphia zoning ordinance provided that "hospitals, sanitaria, eleemosynary and public institutions (other than correctional), shall be located at least 75 feet from any adjoining lot or lots." A graduate clinical psychologist, with long experience in the field, applied for permission to use a building for the education of physically handicapped children, although the premises did not conform to the 75-foot requirement. The Court held that the proposed institution was a school, not a sanitarium, and so was not required to conform to that requirement.

> "Miss Walker's institution is not a sanitarium since it is not designed to give, nor does it give, treatment to its students for their physical disorders; it seeks to educate their minds, which are normal, not to cure their physical disabilities. It is a school the same as any other private school except that its students are physically handicapped. The ordinance, in employing the term 'school', makes no distinction between schools of different types."

Oil Drilling District

CALIFORNIA. *Wood* v. *City Planning Commission of City of San Buenaventura*, 279 Pacific (2d) 95 (District Court of Appeal, January 25, 1955).

The San Buenaventura zoning ordinance provided for the establishment of special "oil drilling districts" in accordance with specified requirements. When the Planning Commission recommended against the establishment of such a district within a long-established R-1 zone, the applicant took the case to court, on the ground that the local authorities had no discretion in the matter, but were required by the ordinance to issue a permit if the stated conditions were met. However, the Court held that the local Planning Commission and City Council did have discretion to refuse such a permit, and had properly done so in this case.

Transition Zoning—on Interior Lots

CONNECTICUT. *Speso* v. *Zoning Board of Appeals of City of New London*, 109 Atlantic (2d) 362 (Supreme Court of Errors, November 16, 1954).

The New London zoning ordinance provided that an interior lot divided into two zoning districts could be used in accordance with the regulations of the less restrictive zone, except within 100 feet of any bounding street. In this case, land on such a lot in a residence district was authorized to be used for multiple dwellings, since a business district (where such dwellings were permitted) adjoined.

Cemetery in Farm Area

PENNSYLVANIA. *Appeal of the Catholic Cemeteries Association of the Diocese of Pittsburgh*, 109 Atlantic (2d) 537 (Supreme Court, November 22, 1954).

The Pittsburgh Catholic Cemeteries Association acquired an option to buy a tract of 185 acres of farm land for a cemetery, and sought a variance from the applicable zoning regulations to permit such use. The Court held that in this case there was no showing of hardship sufficient to support a variance. The argument that it might be impossible to find another suitable tract was dismissed as irrelevant on the question of hardship. One judge dissented in a long opinion which, while rather florid and emotional in its language, was decidedly weak on its law.

Nursery in Residence District

NEW YORK. *Stanco* v. *Halpern*, 136 New York Supplement (2d) 509 (Appellate Division, January 10, 1955).

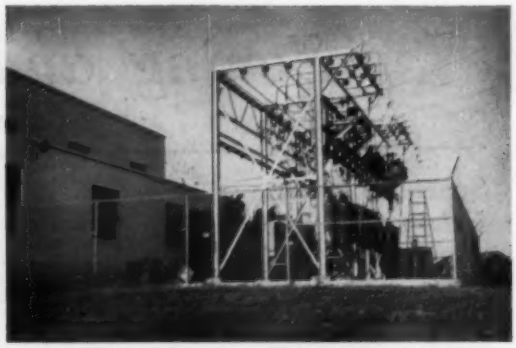
In this case, the zoning regulations permitted a nursery in a residence district, provided that no structures were erected in connection therewith. When the operator sought permission to erect a structure, the Court held that:

> "Assuming that the property cannot be profitably improved with one-family dwellings, the proof is insufficient to show that the property is not usable for any of the purposes permitted in a 'Residence District.'"

Use of Municipal Utility Revenues

NEW MEXICO. *Scott* v. *City of Truth or Consequences*, 262 Pacific (2d) 780 (Supreme Court, October 28, 1953).

This decision involved the use of revenues, derived from municipally owned and operated electric and sewage systems, for the purchase or improvement of which the municipality shall have issued its bonds. The Court held that such revenues could not be diverted to the city's general fund for use in paving streets, but could be used only for maintenance of such utilities, payment of interest on the revenue bonds, and creation of a sinking fund.



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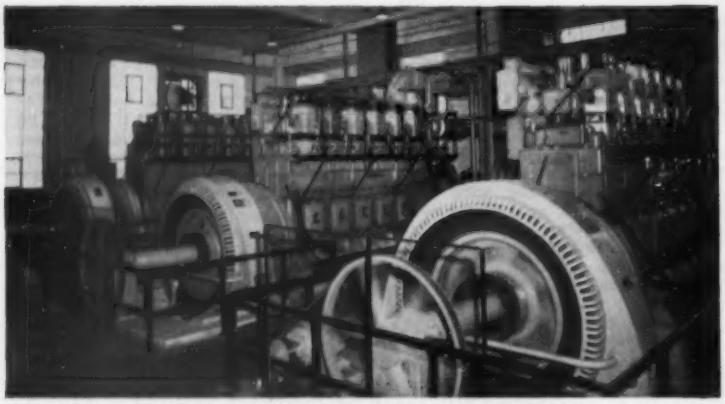

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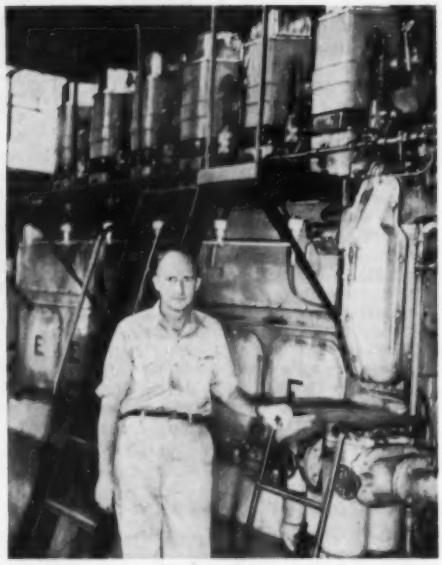

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Annexation—Swamp Land Not Suitable for Urban Use

Where city sought to annex certain area and order to do so was set aside, evidence that substantial part of area sought to he annexed was insusceptible of urban use was sufficient to support judgment setting aside order. *Little Rock* v. *Findley*, 272 S.W. (2d) 823 (Ark., Nov. 29, 1954.

Building Permits—Effect of Change of Council

In Proceeding to bring about cancellation of building permit where members of council present at zoning ordinance hearing were replaced by new members who enacted ordinance, held, charter provisions stating that council is continuing body made enactment valid. *Halpern* v. *Dassler*, 135 N.Y.S. (2d) 8 (Sup. Ct. Westchester Cty., Sept. 13, 1954).

City Property—Lease of for Hotel Invalid

In suit against city to enjoin lease of city property, held, that city had no power to lease land to private individual to be used for construction of hotel for private profit. *City of Clearwater* v. *Caldwell*, 75 So. (2d) 765 (Fla., Sept. 28, 1954).

Contractors—City Denied Interest On Overpayment

Where city made an overpayment through mutual mistake to contractor for construction of municipal improvements, held, city not entitled to interest on refund. *Town of Bennettsville* v. *Bledsoe*, 84 S.E. (2d) 554 (S.C., Nov. 11, 1954).

Drainage—City Liable for Flood Damage from Streets

Where city installed curbs, gutters, and catch basins and water flowed over taxpayer's land instead of through drain as before, held, city liable for damages under statute relating to duty of city to provide drains. *Belue v. City of Greenville*, 84 S.E. (2d) 631 (S.C., Nov. 10, 1954).

Fire Alarm Systems—Competitive Bidding Invalid—Right of City to Recover Payments

Where specifications for installation of a fire alarm system were so restrictive that competitive bidding was impossible, contract was partially invalid and city is not entitled to recover progress payments made for equipment delivered. *Gamewell Company* v. *City of Phoenix*, 216 F. (2d) 928 (.S. App. 9th Cir., Nov. 15, 1954).

Hotels—City Refusal to License Upheld

Right to operate hotel is property right; however, city can refuse to issue license for hotel where valid ordinance requires license shall not be granted unless it appears probable to city that applicant will not rent rooms for immoral purposes or to store intoxicating liquor. *Hertenberger* v. *City of Texarkana*, 272 S.W. (2d) 435 (Ark., Nov. 15, 1954).

Loyalty—Certificates of Nonmembership

Housing Authority held not authorized to require tenants in federally aided project to execute certificate of nonmembership in subversive organization. *Chicago Housing Authority* v. *Blackman*, 122 N.E. (2d) 522 (Ill., Nov. 18. 1954).

Photographers—$25 Per Day Fee Invalid

Where city ordinance imposed annual license fee $35 on local photographers and $25 per day fee on "outside solicitor or salesperson" in photographic field, held, ordinance invalid as prohibited regulation of, and burden upon, interstate commerce. *Olan Mills* v. *City Maysville*, 272 S.W. (2d) 460 (Ky. Oct. 25, 1954).

Public Housing—Use of Park Land For Invalid

Where state granted city land for "public park, street or place for public use, resort and recreation and that no building or other structures shall be erected on such park," held, city could not use area for public housing project. *City of Passaic* v. *State*, 109 A. (2d) 294 (N.J. Super. Ct. App. Div., Nov. 22, 1954).

Public Utilities—Condemnation of Property by City

Action by public utility company seeking to restrain condemnation proceeding to take property for public use by city, held, that statutes authorized action notwithstanding fact that approximately 90% of property is personalty. *Iowa Electric Light and Power Company* v. *The City of Farimont*, 67 N.W. (2d) 41 (Minn., Nov. 19, 1954).

Self Insurance—Failure of City to Pay Claim—Penalty

Where self-insured city's failure to pay uncontroverted compensation claim continued for two months after amendment providing for penalties to enforce compliance, held, imposition of penalty is justified. *Smith* v. *City of Rochester*, 135 N.Y.S. (2d) 323 (Sup. Ct. App. Div., Nov. 24, 1954).

Streets—Change of Grade Damaging Abutting Property Not Compensable

Where town changed grade of highway, held, this is not taking of private property for public use and consequential damage to abutting property was not compensable. *Zache* v. *Town of West Bend*, 67 N.E. (2d) 301 (Wisc., Dec. 7, 1954).

Taxation—Fractions Computed to Full Cent

Statutory limitation of 5% on amount of amusement tax is not intended to prohibit practice of adding additional cent wherever computation of tax results in fraction of half cent or more. *RKO Keith-Orpheum Theatres* v. *City of New York*, 135 N.Y.S. (2d) 385 (Sup. Ct. Sp. Term, Queens Cty., Sept. 23, 1954).

Trees—Limb Causing Death of Child—City Liability

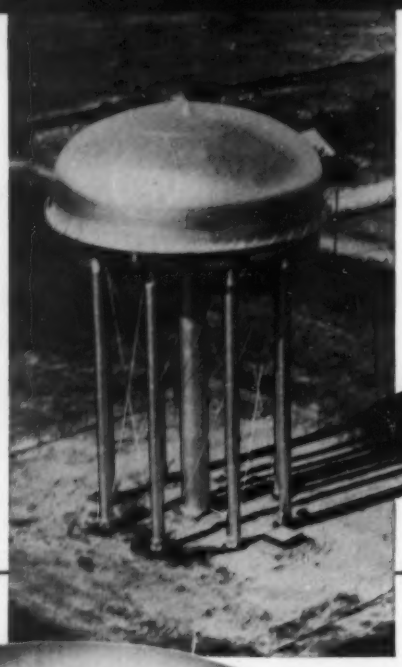
Where dead tree was allowed to stand in "parking" between abutting property owners lot and street city knew, or ought to have known, of potential danger and is held liable for death of child struck by limb falling from tree. *City of Hattiesburg* v. *Hillman*, 76 So. (2d) 368 (Miss., Dec. 13, 1954).

Private Housing on Lands Owned by United States Can Be Taxed

ASSESSING and taxation officials in communities containing large military reservations will be interested in a recent analysis of court cases upholding the right of such communities to tax privately built housing on the government land. The analysis appears in the April 1955 issue of the *Assessors' News Letter*, published by the National Association of Assessing Officers, 1313 E. 60th St., Chicago 37, Ill.

The taxation issue arose as a result of the federal government's decision in 1947 to allow private developers to build rental housing on government reservations to ease acute housing shortages in and around rapidly growing military bases. The issue facing the courts was whether local and state property taxes could be levied on such properties, which, although privately developed and owned, were on nontaxable government lands.

The analysis in the *Assessors' News Letter* cites three state court decisions and one federal court decision clearly upholding the right of municipalities to tax the housing. In most of the decisions, the courts have declared that the right stems from congressional consent to such taxation contained in the 1947 law that permitted private housing to be built on military reservations. The 1947 law was known informally as the Wherry Act.



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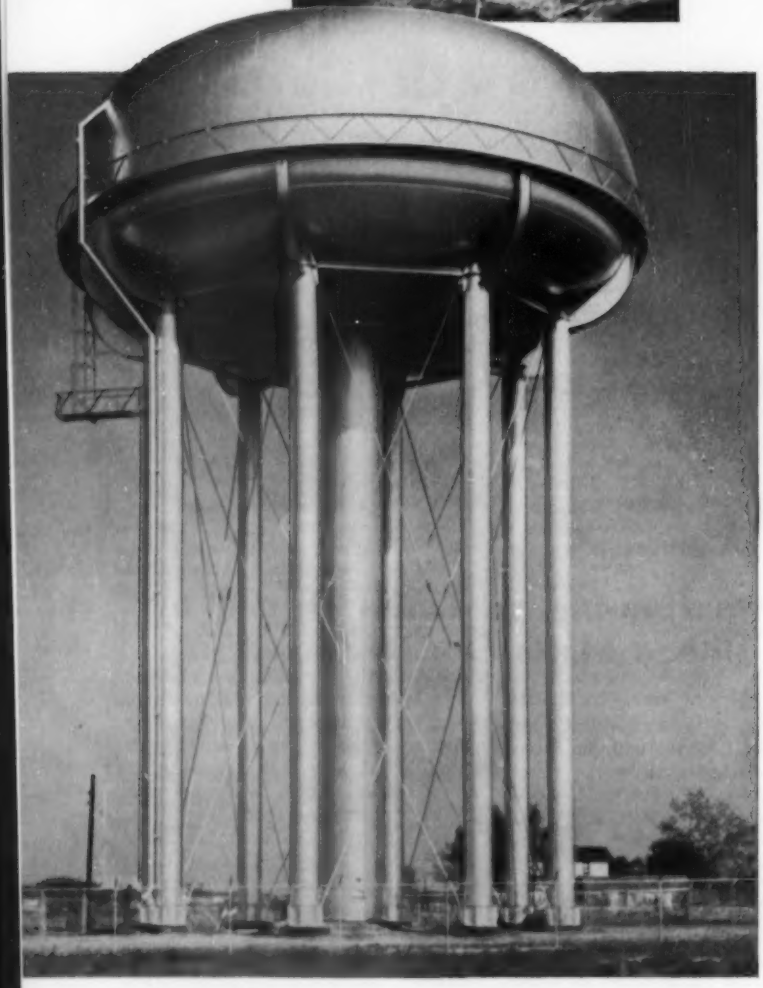

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Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Leslie R. Rudd
Englewood, Colo.

C. L. Lineback
Salisbury, N. C.

Marvin W. Lee
South Boston, Va.

John T. McHugh
Lancaster, N. H.

S. C. MacIntire, Jr.
Rocky Mount, N. C.

EARL E. BRILL, manager of Madawaska, Maine, has been appointed city manager of Fairfield, Maine, succeeding C. E. Robinson.

The first manager of Altus, Okla., is LEON CARVER, manager of Henryetta, Okla.

Whittier, Calif., has appointed KENNETH B. DOUGLASS, city manager of Compton, Calif., to succeed M. Deane Seeger as city manager.

The first manager of Essex Junction, Vt., is CORWIN S. ELWELL, manager of Bethel, Vt.

Santa Fe, N. M., has appointed C. O. ERWIN, a state highway engineer in New Mexico, as that city's first city manager.

REX D. GILMORE, an engineer in private business, was appointed city manager of Smyrna, Del., succeeding S. C. Marvel.

The first city manager of Monahans, Texas, is MORRIS M. HOWARD, the assistant manager at Midland, Texas.

Blacksburg, Va., has appointed WILLIAM F. LAVECCHIA, city engineer of Athens, Tenn., to succeed William M. Sterrett as city manager.

Grand Rapids, Mich., has appointed DONALD M. OAKES, manager of Berkley, Mich., to succeed George Welsh as city manager.

ROBERT E. SHARP, manager of Kodiak, Alaska, was appointed city manager of Ketchikan, Alaska, succeeding Victor P. Guns.

The first manager of Ipswich, Mass., is NORRIS W. STILPHEN, manager of Old Orchard Beach, Maine.

HAROLD B. VASEY, manager of Carlisle, Pa., was appointed city manager of Mankato, Minn., succeeding C. F. Trinkle.

EARL WHITNEY was appointed city manager of Belleville, Kans., succeeding Joe E. Horner.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association

Citizen Organizations Unite for Better Housing

AS an example of broad citizen cooperation, these 19 organizations concerned with housing in the Cincinnati metropolitan area cooperated with the Better Housing League in its 39th annual meeting:

Academy of Medicine of Cincinnati
American Institute of Architects
Cincinnati Architectural Society
Cincinnati Central Labor Council, AFL
Cincinnati Chamber of Commerce, Clean-Up, Paint and Beautify Committee
Cincinnati Electrical Association
Cincinnati Lumbermen's Club
Cincinnati Master Plumbers Association
Cincinnati Real Estate Board
Cincinnati Retail Merchants Association
Cincinnatus Association
Federated Civic Association
Federated Garden Clubs of Cincinnati and Vicinity
Fourth Street Area Association
Junior Chamber of Commerce
League of Women Voters of Cincinnati
Producers Council, Incorporated
Property Owners Association
Queen City Association.

Major General Frederick A. Irving, who retired as Superintendent of West Point last August and is now President of the American Council to Improve Our Neighborhoods (ACTION)*, was the principal speaker. Presented at the meeting was a resolution calling for the establishment of a local housing and neighborhood improvement committee for the purpose of improving housing conditions. It was further recommended

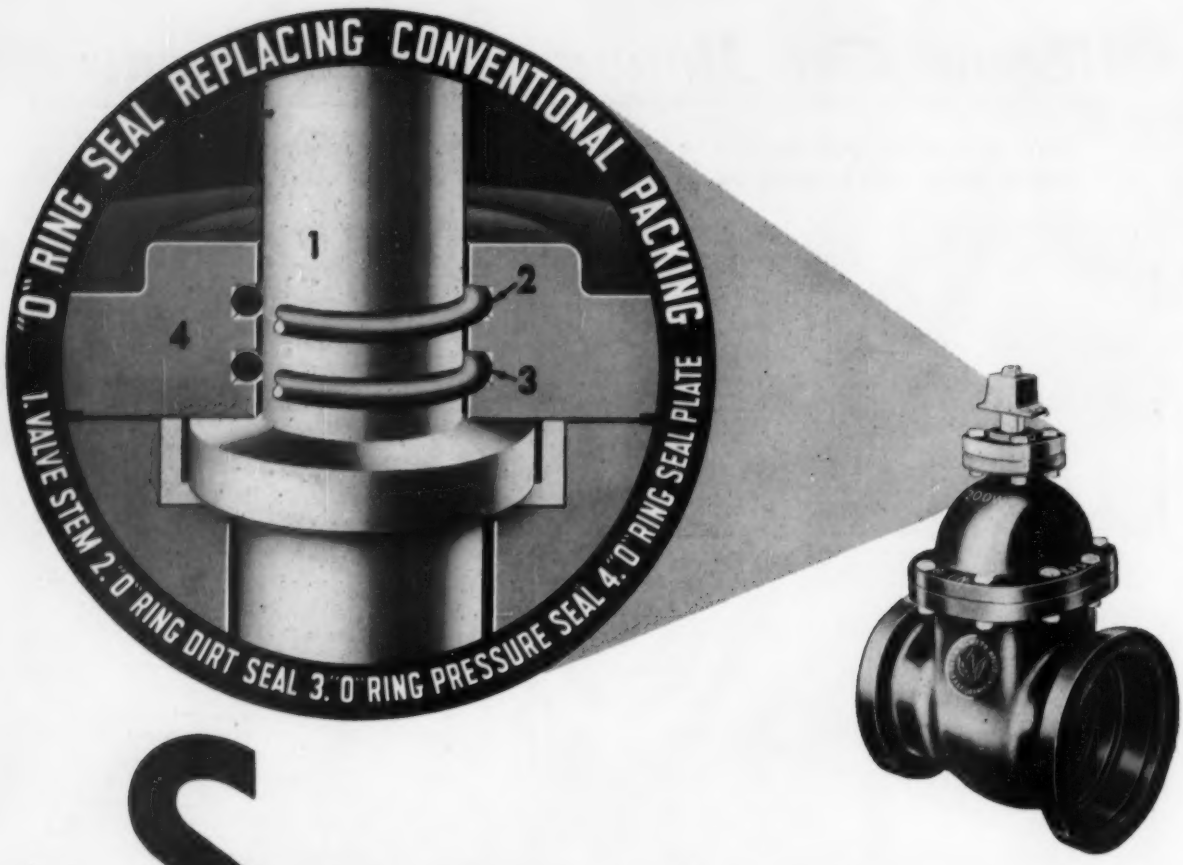
that efforts be made to unite the entire area of Greater Cincinnati in a study of neighborhood needs, including block-by-block enlistment of property owners, to the end that our community will improve its housing conditions and by so doing will enhance interest in property maintenance by both tenants and owners, increase the benefits of ownership, thereby adding to the stability of property as a basis for financial support of local government.

The resolution, which passed unanimously, had the whole-hearted support of the over 300 citizens participating in the meeting. Its adoption was moved by the Executive Secretary of the Property Owners Association and seconded by the Secretary of the District Carpenters Council—a good indication that there is genuine desire for the development of a widely representative citizen group to assist in improving housing in the Cincinnati area.

Already notices have been sent to the cooperating organizations and no time will be lost in the organization of the committee and outlining the work to be accomplished in the time ahead.

BENJAMIN P. GROVES
Executive Secretary
Better Housing League of Cincinnati and Hamilton County, Inc.

*Editorial Note: For a list of "ACTION" reports, see page 201 of this issue of THE AMERICAN CITY.



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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

June 7-10—Denver, Colo.
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Meeting (Shirley-Savoy Hotel). Exec. Vice-Pres., L. H. Prince, 1026 17th St. NW., Washington 6, D. C.

June 8-10—Albert Lea, Minn.
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Meeting (Albert Lea Hotel). Exec. Sec., C. C. Ludwig, University of Minnesota, 15 University Library Bldg., Minneapolis 14, Minn.

June 8-11—Buck Hill Falls, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Buck Hill Falls Inn). Sec.-Treas., Henry C. Lamparski, 1327 Pacific Ave., Brekenridge, Pa.

June 9-10—Tacoma, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Winthrop Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

June 9-11—McCall, Idaho
IDAHO MUNICIPAL LEAGUE. Annual Meeting (Shore Lodge). Exec. Sec., Robertson W. Smith, Box 787, Weiser, Idaho.

June 10-11—Ocean City, Md.
MARYLAND MUNICIPAL LEAGUE. (George Washington Hotel). Exec. Sec., Edmund C. Mester, P. O. Box 276, College Park, Md.

June 12-17—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION. Annual Conference (Conrad Hilton Hotel). Sec., Harry E. Jordan, 521 Fifth Ave., New York, N. Y.

June 13-14—Albany, N. Y.
NEW ENGLAND SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Joint meeting with the New York Section. Sec.-Treas., Henry F. Munroe, 75 Paine Ave., Cranston 10, R. I.

June 15-17—Buffalo, N. Y.
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Statler). Exec. Sec., Morgan Strong, 6 Elk St., Albany, N. Y.

June 16-18—Miles City, Mont.
MONTANA MUNICIPAL LEAGUE. Annual Meeting. Exec. Dir., Alfred F. Klinger, Box 51, Kalispell, Mont.

***June 16-19—Geneva, N. Y.**
ELEVENTH ANNUAL INSTITUTE OF COMMUNITY LEADERSHIP, conducted by the New York State Citizens' Council (Hobart College). Institute Director, Mrs. Dorothy J. Mial, 613 E. Genessee St., Syracuse 2, N. Y.

June 21-24—Minneapolis, Minn.
THE AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Radisson Hotel). Convention Manager, Arthur B. Holmes, 1735 New York Ave. NW., Washington, D. C.

June 22-24—Columbus, Ohio
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Conference. (Deshler-Hilton.) Sec.-Treas., Ward E. Conrad, 301 Ohio Departments Bldg., Columbus 15, Ohio.

June 22-24—Deadwood, S. D.
LEAGUE OF SOUTH DAKOTA MUNICIPALITIES. Annual Meeting (Franklin Hotel). Exec. Dir., J. G. Barger, P. O. Box 984, Aberdeen, S. D.

June 22-24—Glenwood Springs, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Meeting (Colorado Hotel). Exec. Dir., Jay T. Bell, 327 Norlin Library, Boulder, Colo.

June 22-24—Rochester, Minn.
CENTRAL STATES SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Kahler Hotel). Sec.-Treas., George F. Bernauer, 713 Chapman St., Madison, Wis.

June 26-28—Jackson, Miss.
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Meeting (Heidelberg Hotel). Exec. Sec., George Lemon Sugg, 316 E. Pearl St., Jackson, Miss.

***June 22-24—San Diego, Calif.**
INSTITUTE OF TRAFFIC ENGINEERS—Western Section. Annual Meeting (El Cortez Hotel). Sec.-Treas., Robert E. Dunn, 506 N. Puget St., Olympia, Wash.

June 26-29—Detroit, Mich.
AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Annual Meeting (Sheraton Cadillac Hotel). Corr. Sec., Bradford Williams, 9 Park St., Boston 8, Mass.

June 26-29—Philadelphia, Pa.
PENNSYLVANIA STATE ASSOCIATION OF BOROUGHS. Annual Meeting (Benjamin Franklin Hotel). Sec., H. F. Alderfer, Room 281, The Capitol, Harrisburg, Pa.

June 26-July 1—Atlantic City, N J.
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting (Chalfonte-Haddon Hall). Exec. Sec., Robert J. Painter, 1916 Race St., Philadelphia, Pa.

July 17-20—Richmond, Va.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (John Marshall Hotel). Exec. Sec., Keith L. Seegmiller, 1616 Eye St. NW., Washington, D. C.

July 17-20—Edgewater Park, Miss.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting (Edgewater Gulf Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

July 20-23—Chattanooga, Tenn.
NATIONAL SECRETARIES ASSOCIATION. Annual Meeting (Read House). Exec. Sec., Helen J. Boyle, 25 E. 12th St., Kansas City, Mo.

July 24-27—Erie, Pa.
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Convention (Lawrence Hotel). Exec. Dir., 320 State Theatre Bldg., Harrisburg, Pa.

July 24-27—Seattle, Wash.
NATIONAL MUNICIPAL LEAGUE. National Conference on Government. Exec. Dir., Alfred Willoughby, Carl H. Pforzheimer Bldg., 47 E. 68th St., New York 21, N. Y.

Aug. 1-5—Santa Barbara, Calif.
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Mar Monte Hotel). Sec.-Treas., L. C. Chadwick, Department of Horticulture, Ohio State University, Columbus, Ohio.

Aug. 22-24—State College, Pa.
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Conference (The Pennsylvania State University). For information, address Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

Aug. 28-Sept. 1— Edmonton, Alberta
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Meeting (Macdonald Hotel). Exec. Dir., George S. Mooney, Office M-16, Mount Royal Hotel, Montreal Quebec, Canada.

Sept 7-9—Saranac, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Meeting (Saranac Inn). Sec., Kimball Blanchard, Rensselaer Valve Co., 56 Grand St., White Plains, N. Y.

Sept. 8-10—Mackinac Island, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Convention (Grand Hotel). Dir., John H. Huss, 205 S. State St., Ann Arbor, Mich.

Sept. 11-13—Fort Monroe, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Convention (Chamberlin Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

Sept. 11-13—Minot, N. D.
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Convention (Clarence Parker Hotel). Exec. Sec., Roberta C. Burr, 504½ Main Ave., Bismarck, N. D.

Sept. 11-13—Hutchinson, Kans.
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Baker Hotel). Exec. Sec., John G. Stutz, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 12-14—Lexington, Ky.
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Phoenix Hotel). Sec., J. Wiley Finney, Jr., 553 S. Limestone St., Lexington, Ky.

Sept. 12-14—Shawnee-on-Delaware, Pa.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Convention (Shawnee Inn). Sec., Elsie V. Haas, 684 Park Ave., New York 21, N. Y.

Sept. 14-16—Flint, Mich.
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Sec. T. L. Vander Velde, Chief, Section of Water Supply, State Department of Health, Lansing 4, Mich.

Sept. 14-17—Salt Lake City, Utah
UTAH MUNICIPAL LEAGUE. Annual Convention (Newhouse Hotel). Acting Exec. Dir., A. M. Ferro, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 14-17—Saranac Inn, N. Y.**
COUNTY OFFICERS ASSOCIATION OF THE STATE OF NEW YORK. Annual Meeting (Saranac Inn). Exec. Sec., D. C. Scribner, County Bldg., Johnstown, N. Y.

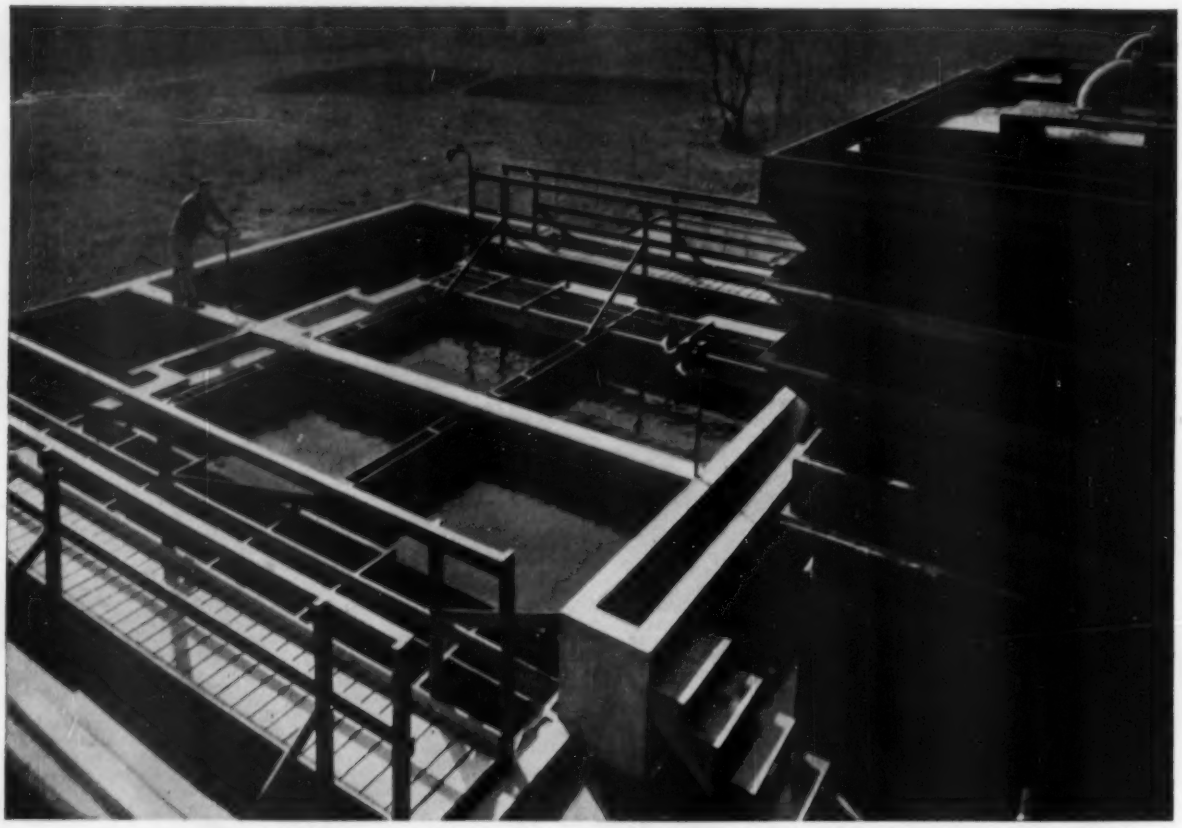
***Sept. 18-20—Grand Island, Nebr.**
LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Convention (Hotel Yancy). Exec. Sec.-Treas., C. E. Beals, 303 Continental Bldg., Lincoln, Nebr.

***Sept. 18-21—San Francisco, Calif.**
LEAGUE OF CALIFORNIA CITIES. Annual Convention (Palace, St. Francis, Sir Francis Drake Hotels). Associate Director, Howard Gardner, Hotel Claremont, Berkeley 5, Calif.

***Sept. 18-22—Essex County, N. Y.**
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Convention (Lake Placid Club). Sec., Joseph C. Knox, NEWWA, 73 Tremont St., Boston 8, Mass.

Sept. 18-23—Louisville, Ky.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Conference (Kentucky Hotel). Exec. Sec., Alfred B. LaGasse, 143 S. Lincoln Ave., Aurora, Ill.

(Continued on page 213)



Raw well water with 30 parts per million of iron enters the double coke-tray Permutit *Aerator* (right) which oxidizes the iron and reduces CO_2. Next step is the Permutit *Precipitator* (left) where lime is added to raise pH and precipitate the iron . . . clay to thicken the precipitates. The resulting floc forms a suspended sludge blanket that speeds the chemical reaction . . , makes it more complete. Final treatment is by 5 Permutit Pressure Filters which remove remaining traces of precipitated iron and turbidity to deliver clear, iron-free effluent.

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Municipal & Civic Publications

Swimming Pool Purifier

PURIFICATION OF SWIMMING POOL WATER WITH HTH TABLETS—*Hypochlorite Products Department, Industrial Chemical Division, Olin Mathieson Chemical Corporation, 10 Light St., Baltimore 3, Md.* 1955. 64 *pp. Free.*

Useful to operators of swimming pools, this up-to-date manual contains information—like the chart of normal daily chlorine requirements—that is not generally available. Extremely well organized, the book is divided into four sections and illustrated with charts, drawings, and tables.

The first section discusses the growth and development of swimming pools, including advances in hygienic operation, HTH tablets as a swimming-pool disinfectant and as a hypochlorinator, and classification of swimming pools. The second analyzes pool water purifying agents, including those for disinfection, chlorine, and required dosages. The third section is concerned with manual feeding of hypochlorite products: quick-dissolving and liquid hypochlorites, manually fed tablets, and use of tablets in specific types of pools. The last part divulges general information and considerations of installation and operation, and details on installation and operation of fill-and-draw and flowing-through pools.

Well-Written Zoning Report

ZONING SURVEY FOR BONNER SPRINGS. *Governmental Research Center, University of Kansas, Lawrence, Kansas. April* 1955. 42 *pp.*

This is a simple and easy-to-read report recommending the adoption of a zoning ordinance for a small Kansas community of about 3,000 persons. The report presents an analysis of the existing land uses in Bonner Springs, estimates future demands for land development to support a specified population growth, and outlines the basic framework for a zoning map and ordinance for the community. The writing style of the author is good, and planners and technicians seeking a model for a preliminary report outlining the kinds of restrictions that ought to go into a zoning ordinance, will find this helpful.

Consolidation of Community Services Recommended

AN ADMINISTRATIVE SURVEY OF THE GREATER GULF BEACHES OPPOSITE ST. PETERSBURG. *By William C. Havard. Public Administration Clearing Service, University of Florida, Gainesville, Fla.* 1955. 68 *pp.*

The Gulf beach communities that lie just opposite St. Petersburg on three islands have grown rapidly during the post-war boom in Florida. To manage their affairs, the residents of the area have formed 13 municipalities having a variety of governmental forms. One, having 4,500 residents, operates under a council-manager government. The main problem is that the communities are all small and the municipal services that each government provides vary widely, although most are substandard. This report recommends that the communities consolidate their governmental functions. Four alternative consolidation schemes are discussed.

Drainage and Construction Data

HANDBOOK OF DRAINAGE AND CONSTRUCTION PRODUCTS — *Armco Drainage and Metal Products, Inc., Middletown, Ohio.* 1955. 592 *pp.* $5 *postpaid.*

Designed for use by engineers concerned with drainage and construction problems, this carefully organized handbook offers a comprehensive technical treatment of the subject. Most of the chapters are briefly summarized and a complete index with cross-references, special charts, tables, and examples expedite design applications and procedures.

In 10 sections and 64 chapters, it covers strength research and design; durability studies and design; economic factors; design principles and practice; subsurface, special drainage, and miscellaneous problems; and installation instructions. An appendix summarizes research on underground conduits.

Sewage Treatment and Sewer Design

MANUAL FOR SEWAGE PLANT OPERATORS—*Texas Water and Sewage Works Association, distributed through Texas State Department of Health and the Texas Water and Sanitation Research Foundation, Austin, Texas. Revised Edition of* 1946 *publication. Copies may be obtained from the Association,* 2202 *Indian Trail, Austin, Texas.* 1955. 511 *pp.* $6.50; *to nonmembers; to other State Associations* $6.00 *in quantities of* 10 *or more.*

The Texas Water and Sewage Works Association issues its second edition of its simple and very readable manual for sewage-works men. The Association has assembled 35 authors who have written the various sections of the book. It makes a practical addition to the library of any sanitation man from the pump operator to the consulting engineer. The second edition gives more emphasis to sewage treatment and its relation to public health, sewage pumping, sewage irrigation, and other specialized methods of disposal.

Land Value Taxation

LAND VALUE TAXATION AROUND THE WORLD. *Edited by Harry Gunnison Brown, Harold S. Buttenheim, Philip H. Cornick, and Glenn E. Hoover, with the special aid of Miss V. G. Peterson. Robert Schalkenbach Foundation, Inc.,* 50 *East* 69*th St., New York* 21, *N. Y.* 1955. 216 *pp.* $3.

This book is dedicated "to all who believe that land, as distinct from the products of labor, is a free gift to mankind, and that its annual value should be devoted to public purposes."

It deals with the efforts made by various peoples to bring this belief to practical fruition.

So far as possible the reports that make up the book have been prepared by persons who have had direct knowledge of the developments they have described and in which they have been active participants. These reports come from Australia, New Zealand, The Union of South Africa, Denmark, Canada, The United States, Great Britain, Argentina, Hungary, China, and Germany.

Three Booklets on Performance Budgeting

PERFORMANCE BUDGETING AND UNIT COST ACCOUNTING FOR GOVERNMENTAL UNITS. *May,* 1954. 19 *pp.* $1.

ADMINISTRATIVE USES OF PERFORMANCE BUDGETS. *Nov.* 1954. 15 *pp.* $1.

BIBLIOGRAPHY ON PERFORMANCE BUDGETING. *Nov.* 1954. 2 *pp.* 25 *cents. Municipal Finance Officers Association,* 1313 *E.* 60*th St., Chicago* 37, *Ill.*

Performance budgeting as an effective tool for controlling municipal expenditures and estimating future expenditures is gaining widespread interest among local officials. These three publications will give a clear view of what is meant by such budgeting to those who are not familiar with its technique. The first booklet contains the following articles: How to Initiate a Performance Budget Program; Operation Analysis—The Basis for Performance Budgeting; Accounting and the Performance Budget. The second booklet contains the following: Work Measurement; Practical Application of Performance Budgeting in the City of New Orleans, La.; The Engineer Views Municipal Use of Performance Budgeting. The bibliography contains over 60 listings of books and articles on performance budgeting.

ACTION Releases Reports

ACTION RESEARCH MEMORANDA — *Released by the American Council To Improve Our Neighborhoods, Inc., Box* 462, *Radio City Station, New York* 20, *N. Y. Seven mimeographed Memoranda released in April,* 1955.

These reports cover: a Case Study: Baltimore Housing Court; Case Study: Baltimore Fight Blight Fund; Case Study: Quaker "Self-Help" Rehabilitation Program in Philadelphia; Selected Queries to ACTION (concerning its stand on certain issues, its recommendations, its set-up); American Housing Statistics on Condition, Supply, and Demand; Citizen Organization for Community Development; 100 Selected References to Problems of Community Development and Improvement; Sources of Aid to Community Development and Improvement Programs; and A Ten-Year Investment to Eliminate Blight and Slums.

Highway Materials Standards

MINERAL AGGREGATES, CONCRETE, AND NONBITUMINUS HIGHWAY MATERIALS — *American Society for Testing Materials,* 1916 *Race St., Philadelphia, Pa. December* 1954. 352 *pp.* $3.50.

Sponsored by Committee C-9 on Concrete and Concrete Aggregates and Committee D-4 on Road and Paving Materials, this compilation of ASTM Standards contains 103 ASTM designations, including 28 adopted in 1954. Subjects covered include specifications and methods of test for aggregates; ready-mixed concrete; air-entraining admixtures, methods of test for air content of concrete, compressive strength, flexural strength, freezing and thawing, slump test; brick and block pavement materials; concrete curing material; expansion joint fillers; cement.

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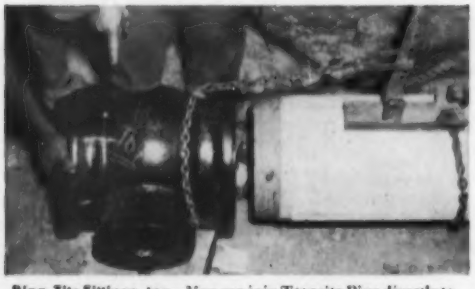

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Feature of New York Region

METROPOLIS IN THE MAKING: THE NEXT TWENTY-FIVE YEARS IN THE NEW YORK METROPOLITAN REGION. *Regional Plan Association, Inc., 205 East 42nd St., New York, N. Y. 1955. 88 pp. Cloth-bound $3. Paper-bound $2.*

The Regional Plan Association celebrated its 25th anniversary in October 1954 by sponsoring a conference that looked ahead to the next 25 years in the New York region. This book presents the texts of the remarks made by the main speakers at the conference. The most important talks were "Transportation in the New York Metropolitan Region in the Next Twenty-Five Years" by Austin Tobin, Executive Director of the Port of New York Authority and "The Next Twenty-Five Years in Government in the New York Metropolitan Region" by Luther Gulick, City Administrator for the City of New York. Both talks stirred pro and con remarks by the special discussants invited to comment on the important points in each of the talks. The transportation discussion was a particularly lively one and makes good reading for persons interested in the traffic problems of major cities.

Good Park Department Report

BERGEN COUNTY'S PARK PROGRAM. Bergen *County Park Commission, Administrative Building, Hackensack, N. J. March* 1955. *Unpaged.*

The accomplishments and future projects of the Bergen County Park Commission are described in his eighth annual report of the Commission. The report is a simple and beautifully illustrated job. Other park departments planning their own annual reports might use this as a good model.

Selected References on Plant Location

LOCATION OF INDUSTRYS AS INFLUENCED BY TAXATION AND SPECIAL INDUCEMENTS—*Compiled by Robert Armstrong. Municipal Reference Library of the Detroit Public Library, Room 1006, City County Bldg., Detroit 26, Mich. 1955. 7 mimeo pp. Free while supply lasts.*

In selecting 54 references on this subject of special inducements to industry to locate in a municipality, Mr. Armstrong lists nine articles that have appeared in THE AMERICAN CITY.

The Program Comes First

HOW LOCALITIES CAN DEVELOP A WORKABLE PROGRAM FOR URBAN RENEWAL—*Housing and Home Finance Agency. Revised March 1955. 11 pp. For sale by Superintendent of Documents, Washington 25, D. C. 10 cents.*

The Housing Act of 1954 requires that in order for a community to be eligible for certain forms of federal assistance to urban renewal, it must have a workable program. This pamphlet tells how a locality can prepare its "workable program" and it describes the fundamentals of such a program, namely: codes and ordinances; a comprehensive community plan; neighborhood analyses; administrative organization; financing, housing for displaced families; and citizen participation.

Local Finance in Small Kansas Cities

MUNICIPAL FINANCE . . . A STUDY OF THIRD-CLASS CITIES. *By Harry O. Lawson, Governmental Research Center, University of Kansas, Lawrence, Kans. April 1955. 28 pp.*

There are many interesting and instructive facts to be found in this study of the finances of the third-class cities in Kansas. In 1953, the average such city in Kansas spent more per capita on its cemetery than it did on its parks or its library. It cost five times as much per capita to take care of streets and alleys as it did to provide fire protection. The average third-class city in the state devoted approximately one-third of its total income to debt service. One-half of the third-class cities had no indebtedness; those that did used about two-thirds of their income to carry and pay off their debts.

Use of Calcium Chloride

MAINTENANCE TIPS FOR UNPAVED ROADS.

CALCIUM CHLORIDE FOR STABILIZATION OF BASES AND WEARING COURSES—*Calcium Chloride Institute, 909 Ring Bldg., Washington, D. C. Both 36 pp.*

Both paperbound manuals are written to assist highway engineers, contractors, and supervisors to obtain best results from the use of calcium chloride. The former gives maintenance tips and suggests that the proper use of the salt will save about 75% of aggregate replacement and blading costs. The stabilization manual deals with properties and designs, types and methods of construction, and specifications.

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New Approach to Study of Delinquency

DELINQUENT BOYS — THE CULTURE OF THE GANG. *By Albert K. Cohen. The Free Press, Glencoe, Ill. May* 1955. 202 *pp.* $3.50.

This book probes into the problem of delinquency with the statement that "If we look at the facts of delinquency in their life setting, we do not see so many boys, each becoming a delinquent after his own fashion, or severally after the same fashion. We see, for the most part, gangs of boys *doing things together* . . . playing ball, smashing windows, 'goin' robbing!" This is the central idea of the book, that the "crisis" of juvenile delinquency can be grappled with only if one first understands delinquency in terms of gangs. The approach is an interesting one, and the book is recommended to officials trying to understand the background of delinquency.

Centrifugal Pumps

HYDRAULICS FORUM PROCEEDINGS — *Fairbanks, Morse & Company.* 1954. 47 *pp.*

The published proceedings of a forum on centrifugal pump problems sponsored in the Spring of 1954 by Fairbanks, Morse & Company in connection with the dedication of the new Kansas City (Kans.) pump plant. The booklet quotes verbatim papers, on the role of research in the future of hydraulic engineering and problems arising from increasing water demands, as well as a symposium, panel discussion, and audience participation session that was held. Copies may be obtained from the company at 600 South Michigan Ave., Chicago 5, Ill.

The Social Effects of Cities

THE CITY: URBANISM AND URBANIZATION IN MAJOR WORLD REGIONS. *By Rose Hum Lee. J. B. Lippincott Company, East Washington Square, Philadelphia 5, Pa.* 1955. 568 *pp.* $5.50.

This textbook stresses the dominant role cities have played in initiating and perpetuating changes in behavior patterns and institutional organizations in society. It points out the methods devised for coping with diverse and large populations in a relatively small land area. It also discusses the manner in which man's ingenuity has met the challenge of dovetailing his complex needs within an ever-changing physical and social environment.

Parts One and Two set forth the natural growth of cities in selected world regions and compare the urban growth between and within these regions. Part Three deals with the physical and population structures and discusses such factors as urban population composition, ecological organization, and urban ghettos. Part Four stresses urban social institutions, while Parts Five, Six, and Seven discuss urban ways of life, urban social problems, and urban planning and social trends.

Discrimination in Housing

A DOCUMENTED REPORT ON HOUSING—*National Urban League,* 1133 *Broadway, New York* 10, *N. Y.* 18 *pp.* 1955.

This booklet reprints a 1944 statement on racial problems in housing and a statement submitted to the President of the United States, June 18, 1954, on the national housing situation as it affects the nonwhite population, as well as a report of a December 21, 1954 HHFA Housing Minorities Conference.

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Bibliography for Assessing Officers

ASSESSMENT STUDY GUIDE, *3rd Edition. National Association of Assessing Officers,* 1313 *East 60th St., Chicago* 37, *Ill.* 1955. 52 *pp.* $2.

The present edition rearranges material and lists mostly new material that was not included in "The Study Guide for Assessing Officers" first issued in 1937 and revised in 1938. It covers the important phases of the assessment function and lists only material that the Association believes to be instructive and profitable.

Avoiding Contract Abuses

THE ADMINISTRATION OF MUNICIPAL CONTRACTS—*Management Information Service Report No.* 135. *April* 1955. 12 *pp. Available to subscribers for the Service, International City Managers' Association,* 1313 *East 60th St., Chicago* 37, *Ill.*

City officials can take certain steps to ensure that municipal funds are safeguarded in awarding contracts. The safeguards against favoritism, extravagance, and fraud—here recommended—grow out of the experience of many cities over a long period of time.

Science of Water

WATER SUPPLY ENGINEERING — *By Babbit and Doland. Fifth Edition. McGraw Hill Book Company, Inc.,* 330 *W. 42nd St., New York* 36, *N. Y.* 608 *pp.* $8.50.

The two renowned professors from the University of Illinois again plod patiently through the science of water supply, updating their previous book somewhat. The authors have a talent for amassing and cataloging a tremendous amount of detail. The book is aimed at the student-engineer, but also will prove useful to the experienced water-works official.

Surveying Text

ELEMENTARY PLANE SURVEYING—*By R. E. Davis. Third Edition. McGraw-Hill Book Company, Inc.,* 330 *W. 42d St., New York* 36, *N. Y.* 507 *pp.* $5.50.

A text aimed chiefly at students and others unfamiliar with the science of surveying. It unfortunately deals only sketchily with the new light European transits and levels, and other foreign methods of surveying that are proving practical here. Other than this, it is a good reference text for any city engineer's library.

Motivation of Shoppers

THE SHOPPING CENTER VERSUS DOWNTOWN—*By C. T. Jonassen. Bureau of Business Research, College of Commerce and Administration, The Ohio State University, Columbus, Ohio.* 1955. 170 *pp.* $3.50.

Three diverse and widely separated American cities—Columbus, Ohio, Houston, Texas, and Seattle, Wash.—are covered in this study of consumer attitudes and shopping practices. These researches test further the method developed in an earlier study by Dr. Jonassen on shopping in Columbus. The present book provides the full findings for Houston and Seattle and summary data for Columbus, and thus affords a broad base for the study's generalizations and conclusions.

The bulk of the material is presented in tables and charts that confirm the measurability of shopping behavior and attitudes. In all three cities congestion is the chief disadvantage of downtown sections, and large selection of goods its chief attraction.

Habits of Shoppers

SHOPPING HABITS AND TRAVEL PATTERNS. Technical Bulletin No. 24. *By Alan M. Voorhees with Gordon B. Sharpe and J. T. Stegmaier. Urban Land Institute, 1737 K St. NW., Washington 6, D. C. March* 1955. 24 *pp.* $3.

The general conclusions of Mr. Voorhees' statistic-packed booklet may sound a bit familiar to some readers, but it is the readers' belief that studies of this sort backed by carefully prepared surveys will be more and more important in coming years. For what Mr. Voorhees has done is to have reduced some hazy notions of shopper habits to concrete figures and graphs. It is such information that will in future years be fed in electronic calculators to aid in adapting outmoded street and transportation systems to new workable means of getting about in crowded cities and towns.

The study analyzes such factors of shopping habits as who makes the trips?; time and duration of the trip; purchase habits; frequency of shopping trips; shoppers' destination; modes of travel; effects of distance on means of travel; and the effect of travel methods on the choice of shopping centers. Among the conclusions are these:

"Shoppers in cities of less than 40,000 population are largely dependent upon downtown for both convenience and shopping goods; shopping trips in the larger urban areas display a more dispersed pattern with the central business district predominantly a shopping goods center."

"The number of shopping trips (auto and transit) generated from any residential area is directly related to automobile ownership. Since transit plays a relatively small role in serving most shopping areas outside the central business district, this relationship explains why two similar shopping centers with trading areas of comparable size can generate different volumes of traffic."

Western GRA Proceedings

PROCEEDINGS OF THE FOURTEENTH ANNUAL CONFERENCE OF THE WESTERN GOVERNMENTAL RESEARCH ASSOCIATION, *Held at Oakland, Calif., September* 23-24, 1954. 59 *mimeo pp. Available from Office of the Secretariat,* 346 *Library Annex, University of California, Berkeley.* $1.

The panel discussions and speeches summarized in this report cover the following topics: Water Development in the West; Criminal Rehabilitation in the West; Public Transit in the Western Metropolis; Problems of the Suburban Community; The Scientific Approach to Urban Air Pollution; Civil Defense in the Atomic Age; School Organization and Problems of School Finance; Training Administrators and Researchers; Intergovernmental Relations and Tax Inequities.

Fire Safety in Brick Walls

FIRE TESTS OF BRICK WALLS—*By S. H. Inberg. National Bureau of Standards Building Materials and Structures Report* 143. 1955. 52 *pages. Order from Government Printing Office, Washington 25, D. C.* 35 *cents.*

The results of a comprehensive series of fire tests conducted under controlled conditions to determine the essential properties of brick walls as fire barriers are given in this report. Besides walls of the usual solid design, a number of hollow walls were included with bricks laid flat or on edge to form one or more unfilled spaces between the brick wythes.

Modesto Publicizes Its Achievements

CITIZENS ACT! *Published by Office of the City Manager, P. O. Box* 642, *Modesto, Calif.* 1955. 76 *pp.* $1.

The brochure, originally prepared to support Modesto's successful candidacy in the 1954 All-America Cities Awards contest, has been expanded to include nomination and entry-form data, presentation speeches made before the jury in Kansas City, and news stories of Modesto's winning of an award. The main section of the brochure tells how the citizens participated in solving problems of rapidly growing fringe areas, parking, sewerage, and recreation.

YEARS OF ACHIEVEMENT. *March* 1955. 12 *pp.*

Modesto's latest progress report, in addition to giving the information usually contained in an annual report, tells of the accomplishments during almost four years of Council-Manager government under the new city charter.

Municipal Salaries

PAY RATES FOR SELECTED CITY JOBS IN JANUARY, 1955 — *Management Information Service Report No.* 134. *March* 1955. 21 *pp. Available to subscribers for the Service, International City Managers' Association,* 1313 *East* 60*th St., Chicago* 37, *Ill.*

Wage and salary data and hours of work per week for 18 of the most standardized positions in local government are presented in this report. The statistics, based on information from 92 cities, indicate that fewer cities granted general pay increases in 1954 than in previous years.

Integration of Suburban Fringes

THE CENTRAL CITY AND ITS SUBURBAN AREA —*April* 1955 *issue of* The Journal *of The American Chamber of Commerce Executives,* 1615 *H Street, NW., Washington* 6, *D. C.* 27 *pp. Sub.* $5 *per year; single copy* $1.25.

The articles contained in this special issue include the following: "The Problems of Our Metropolitan Areas," by Walter H. Blucher.

"The Challenge of Urban Growth," by John C. Bollens.

"The Dayton, Ohio Chamber Helps Sell Annexation," by Harry R. Hall.

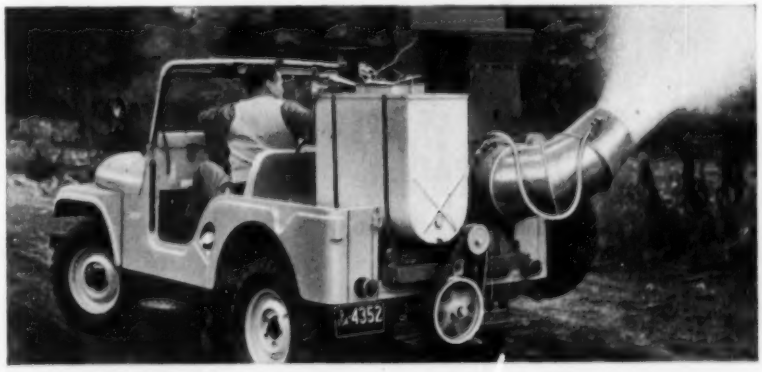
"The Atlanta, Georgia Chamber Helps to Create an Acceptable Solution," by W. Roy Ulrich.

"One Chamber of Commerce Adopts A Formal Policy of Integration."

Petroleum Technology

PETROLEUM PRODUCTS AND LUBRICANTS— *American Society for Testing Materials,* 1916 *Race St., Philadelphia, Pa. November* 1954. 980 *pp.* $6.65.

This compilation of standards is directed toward petroleum chemists and other technologists in the industry as well as toward purchasing agents and sales engineers. Some in the automotive, aircraft, railway, and other industrial fields will also find it helpful. This edition gives the latest approved form for over 100 test methods, numerous specifications, and lists of definitions of terms relating to petroleum. Several appendices cover proposed tests of jet fuels, steam turbine oils, and aviation fuels.



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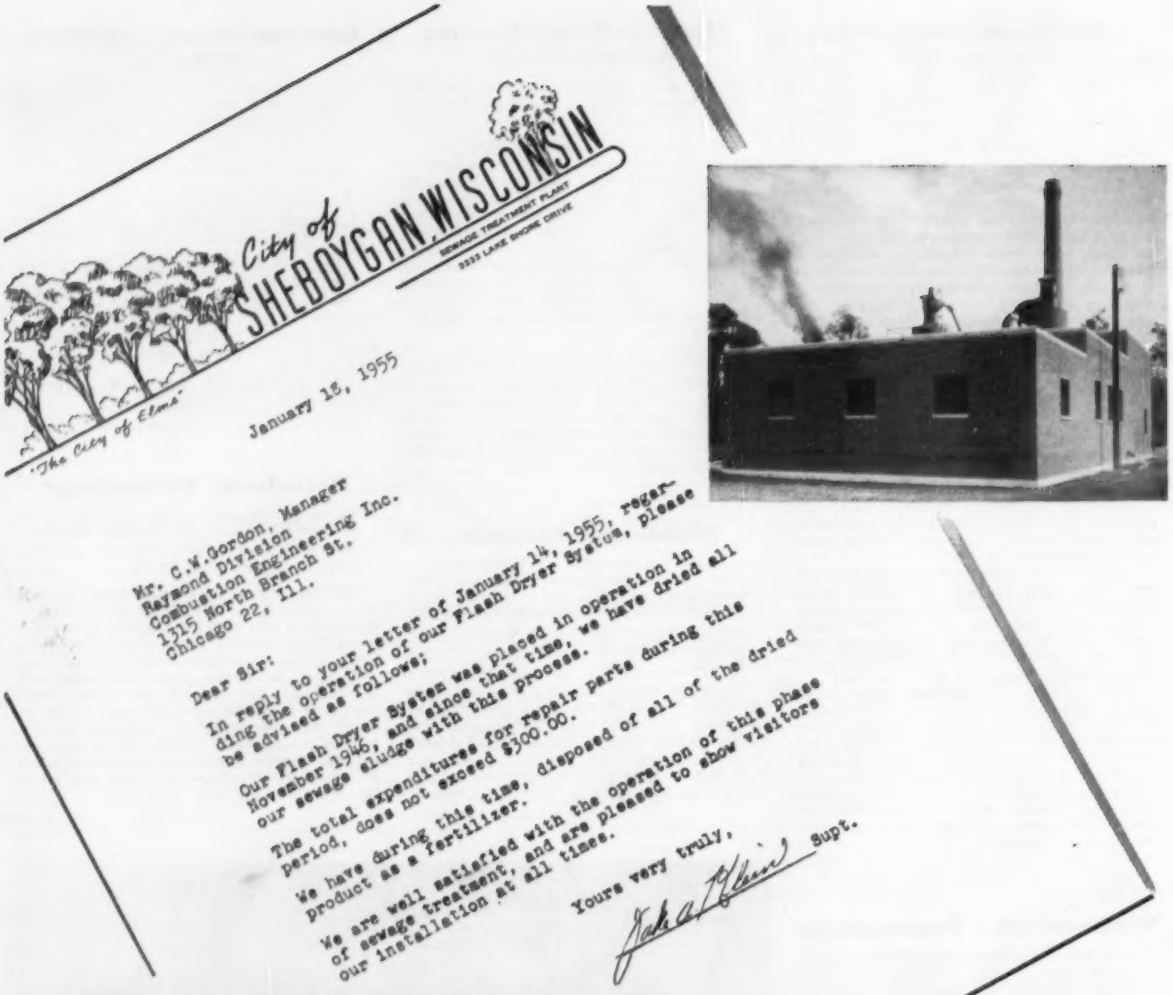
City of SHEBOYGAN WISCONSIN
SEWAGE TREATMENT PLANT
"The City of Elms"
January 18, 1955
Mr. C.W.Gordon, Manager
Raymond Division
Combustion Engineering Inc.
1315 North Branch St.
Chicago 22, Ill.
Dear Sir:
In reply to your letter of January 14, 1955, regarding the operation of our Flash Dryer System, please be advised as follows;
Our Flash Dryer System was placed in operation in November 1946, and since that time, we have dried all our sewage sludge with this process.
The total expenditures for repair parts during this period, does not exceed $300.00.
We have during this time, disposed of all of the dried product as a fertilizer.
We are well satisfied with the operation of this phase of sewage treatment, and are pleased to show visitors our installation at all times.
Yours very truly,
Supt.

Just mention our name in Sheboygan

Mention it at any rate to Jake Klein, Superintendent of the Sewage Treatment Plant, and he will be glad to show you around. He knows us and knows our equipment. In fact, for almost ten years the Sheboygan plant has been flash drying its digested sewage sludge with C-E Raymond Flash Drying equipment—and *selling its entire output*. During the past year total sales were 905 tons.

Naturally, we're pleased as Punch with Jake's letter reprinted here — but hasten to add we've received many others.

So, if you're thinking of a new disposal plant, investigate the C-E Raymond Flash Drying System. It can incinerate—or dry—or both—alternately or concurrently. We believe we have the best system of sewage sludge disposal. We would like the opportunity to tell you why. B-834

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School Bibliography

SELECTED PUBLICATIONS ON SCHOOL ORGANIZATION AND FINANCE—*New Jersey Taxpayers Association, Inc.*, 414-417 *Broad St. Bank Bldg., Trenton 8, N. J. March* 1955. 16 *mimeo pp.*

This bibliography covers such phases of school administration as bonding, accounting, building and maintenance, transportation, class size and teacher supply, federal and state aid, insurance and taxation, retirement, pensions, and salaries, vocational education, and elections.

Other Reports Received

Annual Reports

GREENVILLE, S. C.—1954 Report of Municipal Activities of Greenville, S. C. Presented by Greenville City Council. Illus. 8 pp. Newspaper form.

GREENWICH, CONN.—Annual Report 1954. Published by The Board of Estimate and Taxation. 372 pp.

HEARNE, TEXAS—The Hearne Story. Eighty-Fourth Annual Report. 1954-55. Submitted by N. L. McCarver, City Manager. Illus. 32 pp.

MADISON, WIS.—City of Madison 1954 Report. Madison—Fastest Growing and Most Progressive City in the Midwest. From the Office of Mayor George Forster, to the Citizens. Illus. Newspaper form. 16 pp.

MENLO PARK, CALIF.—1955 Annual Report. Published by order of The City Council. Tables. Unpaged.

NEW ORLEANS, LA.—Annual Report. Department of City Civil Service, 539 Carondelet St., New Orleans 12, La. Illus. 16. pp.

PHILADELPHIA, PA.—Annual Report 1954. Bureau of Public Information and Service, Office of the City Representative. Mimeo. Unpaged.

PROVIDENCE, R. I.—The Providence Report. No. 3 Section of *Providence Sunday Journal*. Available from Office of Mayor, Walter H. Reynolds, City Hall, Providence, R. I. Newspaper form. Illus.

UNIVERSITY CITY, MO.—Around the Clock Service From Your City Government. 1954 Annual Report. Submitted by Elder Gunter, City Manager. Illus. 40 pp.

WESTBURY, N. Y.—1954-1955 in Westbury. Prepared by Kennedy Associates. Obtainable from John A. Dwyer, Village Clerk, Westbury, N. Y.

GENERAL—Annual Report 1953-1954. The Fund for Adult Education, 1444 Wentworth Ave., Pasadena 5, Calif. Tables. 39 pp.

Finance and Taxation

BALTIMORE, MD.—Pertinent Financial Data. Compiled and issued by Commission on Governmental Efficiency and Economy, Inc., Mercantile Trust Bldg., Baltimore 2, Md. Tables. 16 pp.

LITTLE ROCK, ARK.—Statement of Financial Information. Report of the City Clerk and Finance Office. Illus. 48 pp.

MINNEAPOLIS, MINN.—Financial Statistics of the City for 1955. Issued by the Board of Estimate and Taxation, City Hall, Minneapolis, Minn. April 1, 1955. Tables. 45 pp.

PENNSYLVANIA—Progress 1954. The Pennsylvania Economy League, 611 Blackstone Bldg., Harrisburg, Pa. Illus. 20 pp.

QUEBEC, CANADA—Municipal Statistics. A report from the Quebec Bureau of Statistics. Ministry of Trade and Commerce, Quebec, Canada. Tables. 143 pp.

——STATISTICAL YEAR BOOK—Submitted by Minister of Trade and Commerce, Paul Beaulieu. Tables. 622 pp.

GENERAL—State Government Finances in 1954. United States Department of Commerce, Washington 25, D. C. Tables. 21 pp.

Industry and the Community

CATLETTSBURG, KY. — Industrial Resources. Prepared by the Catlettsburg Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. March 1955. Illus. Appendices. 25 pp.

FRANKLIN, KY.—Industrial Resources. Prepared by The Chamber of Commerce of Franklin, Ky.; and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. March 1955. Map. Appendix. 20 pp.

GEORGETOWN, KY. — Industrial Resources. Prepared by The City Council of Georgetown, and The Agricultural and Industrial Development Board of Kentucky, Capitol Annex Bldg., Frankfort, Ky. January 1955. Illus. Appendices. 17 pp.

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OSKALOOSA, IOWA

GREENUP, KY.—Industrial Resources. Prepared by The Greenup City Council and The Agricultural and Industrial Development Board of Kentucky, Capitol Annex Office Bldg., Frankfort, Ky. February 1955. Map. Appendices. 18 pp.

LOUISA, KY.—Industrial Resources. Prepared by The Greater Louisa Industrial Foundation and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. March 1955. Map. Appendices. 16 pp.

LOUISVILLE, KY—Industrial Resources. Prepared by The Louisville Chamber of Commerce and The Agricultural and Industrial Development Board of Kentucky, Frankfort, Ky. January 1955. Illus. Map. Appendices. 19 pp.

Laws and Legal Decisions

VIRGINIA — Representative Solicitor's Ordinances in Virginia Cities. Report No. 375. April 1955. League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19, Va. 12 pp. $1 in U. S.; $1.25, Foreign Countries.

Miscellaneous

GENERAL—Poultry Ordinance. 1955 Edition. U. S. Department of Health, Education, and Welfare. Public Health Service, Washington 25, D. C. Mimeo. 37 pp.

——Summary of 1955 Public Acts of Interest to Municipalities. By Edmund W. Meisenheider, III, Consultant on Municipal Management. May 1955. Municipal Technical Advisory Service, Division of University Extension, University of Tennessee, Knoxville. Mimeo. 54 pp.

NEWTON, MASS.—Report of Your Weights & Measures Department. December 31, 1954. Copies can be obtained from the Department of Weights and Measures, City Hall, Newton, Mass. Illus. 25 pp.

OAKLAND, CALIF.—Waterfowl of Lake Merritt. Oakland Park Department, 634 14th St., Oakland, Calif. Illus. Unpaged.

Parks and Recreation

ST. CLAIR COUNTY, MICH. — 1954 Outdoor Recreation. St. Clair County Planning Commission, 319 County-City Bldg., Port Huron, Mich. Illus. Maps. 21 pp.

Planning, Housing, and Zoning

CHICAGO, ILL.—Relocation in Chicago 1954. Office of the Housing and Redevelopment Coordinator, March 1955. Tables. 13 pp.

——Residential Construction and Related Data. 1954. Office of the Housing and Redevelopment Coordinator, 69 W. Washington St., Chicago 2, Ill. Maps. 25 pp.

HONOLULU, HAWAII—1954 Annual Report. Honolulu Redevelopment Agency, City and County of Honolulu, Honolulu Municipal Bldg., Honolulu 13, Hawaii. January 1955. Tables. 15 pp.

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD.—An Inventory of Commun-

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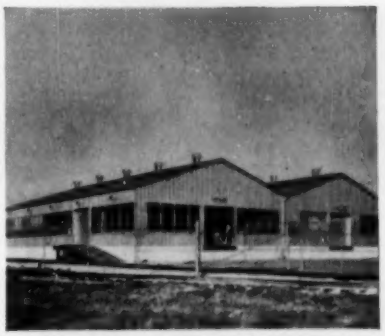

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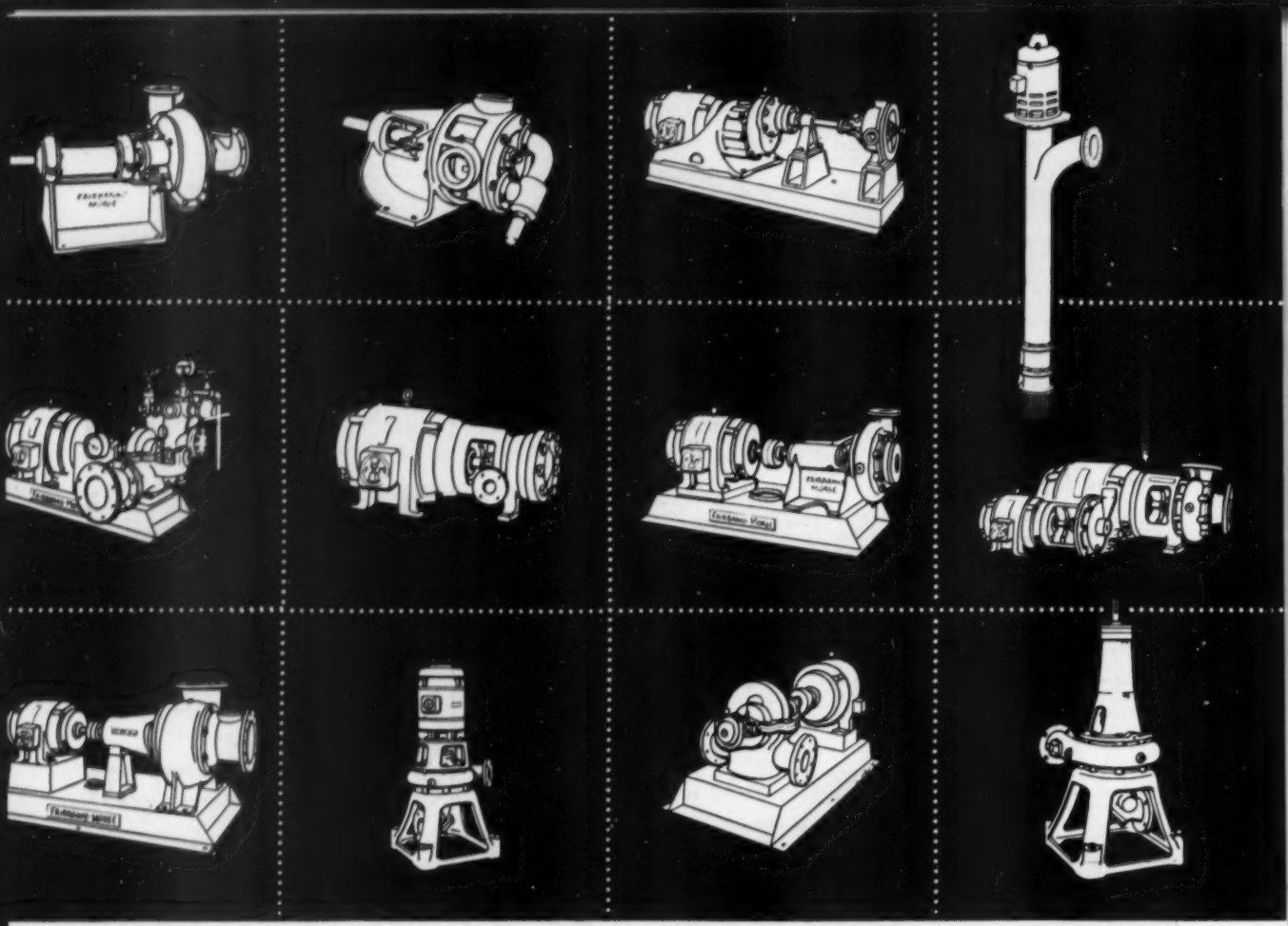

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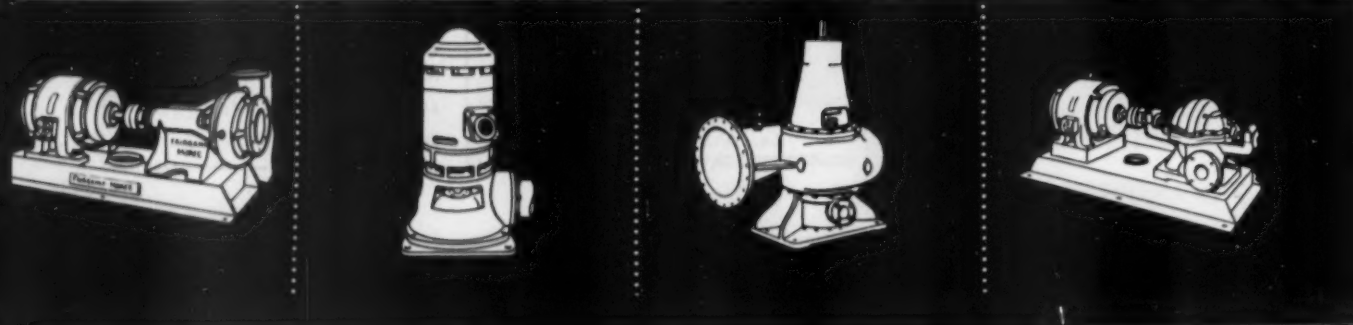

ity Resources. Technical Bulletin No. 3. Prepared by The Maryland-National Capital Park and Planning Commission, Silver Spring, Md. Tables. 27 pp.

Public Safety

GENERAL—Misguided Missiles. The Travelers 1955 Book of Street and Highway Accident Data. The Travelers Insurance Companies, Hartford, Conn. Illus. 28 pp.

Public Works

LOS ANGELES, CALIF.—Annual Report of the City Engineer, 1953-1954. Bureau of Engineering, Department of Public Works. Tables. Map. 64 pp.

PORTLAND, MAINE — Department of Public Works. Annual Report for the Year 1954. Tables. Unpaged.

SYRACUSE, N. Y.—1954 Annual Report. Department of Engineering. Potter W. Kelly, City Engineer. Illus. Tables. 53 pp.

WAUKESHA, WIS.—Annual Report of the City Engineer for 1953-1954. Available from Office of the Board of Public Works, City Hall, Waukesha, Wis. Maps. Graphs. 36 pp.

Sewerage and Sewage Treatment

GENERAL — Studies On Household Sewage Disposal Systems, Part III. Public Health Service Publication No. 397. For Sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Graphs. Appendix. 143 pp. $1.

Smoke Abatement

ALLEGHENY COUNTY, PA.—Fifth Annual Report of Activities of Allegheny County Bureau of Smoke Control. Submitted by Thomas C. Wurts, Director, the Bureau, Pittsburgh, Pa. Illus. 44 pp.

Street Construction and Maintenance

TOLEDO, OHIO—Division of Streets Annual Report for 1954. Division of Streets, 2411 Albion St., Toledo 6, Ohio. Tables. 45 pp.

WAYNE COUNTY, MICH.—Forty-Eighth Annual Report. Fiscal Year 1954. Board of County Road Commissioners, 3800 Cadillac Tower, Detroit 26, Mich. Illus. Map. 120 pp.

GENERAL—Admixtures for Concrete. Authorized reprint from copyrighted *Journal of The American Concrete Institute*. American Concrete Institute, 18263 W. McNichols Rd., Detroit 19, Mich. 75 cents.

Water Supply and Treatment

DUBUQUE, IOWA—55th Annual Report of the Water Department. Submitted by J. J. Hall, Superintendent. Illus. Tables. 60 pp.

ELMIRA, N. Y.—1954 Annual Report of the Elmira Water Board. Submitted by Charles A. Austin, II, Elmira Water Board. Illus. Tables. 32 pp.

HONOLULU, HAWAII—15th Biennial Report 1953-1954. Report of the Manager and Chief Engineer, Edward J. Morgan. Tables. Map. 132 pp.

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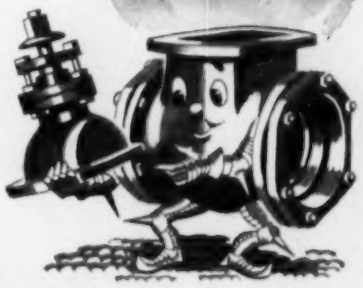

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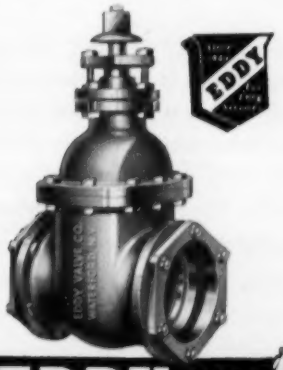

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Conventions—When and Where

(Continued from page 199)

***Sept. 19-21—Laramie, Wyo.**
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting. (Connor Hotel). Sec., J. W. Davis, Johns-Manville Sales, Inc., Denver, Colo.

***Sept. 19-22—Omaha, Nebr.**
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Conference (Fontenelle Hotel). Exec. Sec., Jay W. Stevens, 1014 Merchants Exchange Bldg., San Francisco 4, Calif.

***Sept. 21-23—Atlanta, Ga.**
GEORGIA WATER AND SEWAGE WORKS SCHOOL. Twenty-Fourth Annual Session (Hightower Textile Bldg., Georgia Institute of Technology). For information address A. T. Storey, Georgia Water and Sewage Association, 1210 Hemphille Ave. NW., Atlanta, Ga.

Sept. 21-23—Columbus, Ohio
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Neil House). Sec., M. E. Druley, Dayton Power & Light Co., Wilmington, Ohio.

***Sept. 21-23—Milwaukee, Wis.**
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting. (Hotel Schroeder). Sec., Leon A. Smith, City Hall, Madison, Wis.

***Sept. 21-23—Mobridge, S. D.**
SOUTH DAKOTA WATER AND SEWAGE WORKS. Annual Meeting (Brown Palace Hotel). Exec. Sec., Charles E. Carl, Dir., Div. of Sanitary Engineering, State Department of Health, Pierre, S. D.

Sept. 25—Stowe, Vt.
NATIONAL CONFERENCE OF STATE PARKS. Annual Meeting. Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

Sept. 25-29—Montreal, Que.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Meeting (Sheraton Mount Royal Hotel). Exec. Dir., Dennis O'Harrow, 1313 E. 60th St., Chicago 37, Ill.

***Sept. 25—Oct. 1—Rome, Italy**
INTERNATIONAL UNION OF LOCAL AUTHORITIES. Annual Convention (Esposizione Universale di Roma). For information address Charles S. Ascher, Public Administration Clearing House, 45 E. 65 St., New York, N. Y.

Sept. 26-29—Rochester, N. Y.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Meeting (Hotel Seneca). Sec., Irvin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Sept. 26-29—Boston, Mass.
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Statler Hotel). Gen Sec., Arthur W. Baker, 292 Madison Ave., New York 17, N. Y.

Sept. 27-Oct. 1—Denver, Colo.
NATIONAL RECREATION CONGRESS (Shirley-Savoy Hotel). Sec., T. E. Rivers, 8 West Eighth St., New York 11, N. Y.

***Sept. 29-Oct. 1—Boston, Mass.**
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Conference (Statler Hotel). Sec.-Exhibit Mgr., George F. Arnold, 181 S. Washington Blvd., Columbus, Ohio.

Oct. 2-5—Milwaukee, Wis.
AMERICAN PUBLIC WORKS ASSOCIATION. Public Works Congress and Equipment Show (Hotel Schroeder, Municipal Auditorium). Exec. Sec., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

Oct. 2-6—Philadelphia, Pa.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Benjamin Franklin Hotel). Exec. Sec., Leroy E. Wike, The Mills Bldg., Washington 6, D. C.

Oct. 5-8—Bretton Woods, N. H.
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Convention (Mt. Washington Hotel). Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago 37, Ill.

Oct. 10-13—Atlantic City, N. J.
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual meeting (Ambassador Hotel). Exec. Sec.—Editor, Ralph E. Fuhrman, 4435 Wisconsin Ave. NW., Washington, D. C.

***Oct. 16-20—New York, N. Y.**
NATIONAL ASSOCIATION OF ASSESSING OFFICERS. International Conference on Assessment Administration (Hotel New Yorker). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 16-19—Washington, D. C.
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Convention (Shoreham Hotel). Exec. Dir., Albert H. Hall, 730 Jackson Place NW., Washington, D. C.

***Oct. 17-20—Cleveland, Ohio**
NATIONAL ASSOCIATION OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Convention (Statler Hotel). Exec. Dir., John Lange, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 17-21—Chicago, Ill.**
NATIONAL SAFETY CONGRESS AND EXPOSITION. (Conrad Hilton Hotel). Sec., R. L. Forney, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

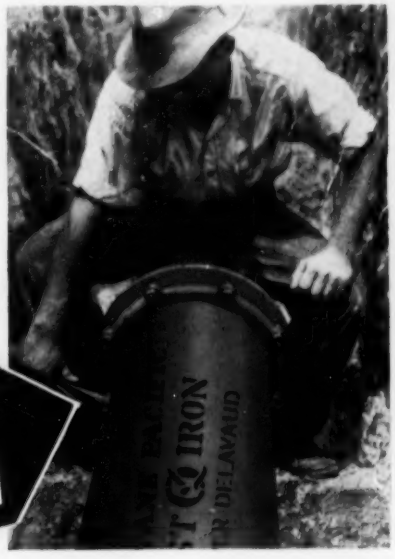
Oct. 24-27—Pittsburgh, Pa.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Convention (William Penn Hotel). Exec. Sec., M. M. Todd, 211 Strathcona Hall, New Haven 11, Conn.

***Oct. 25-28—Sacramento, Calif.**
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Meeting (Senator Hotel). Sec.-Treas., H. F. Jerauld, 1040 Manzanita Ave., Pasadena 3, Calif.

***Jan. 11-14—Miami Beach, Fla.**
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention (Municipal Auditorium). Exec. Vice-Pres., Gen. Eugene Reybold, World Center Bldg., Washington 6, D. C.

MAKE JOINTS

WITH A RATCHET WRENCH



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MECHANICAL JOINT CAST IRON PIPE

Mechanical Joint has rapidly become the leading type joint for cast iron pipe for water or gas. A McWane-Pacific Boltite mechanical joint pipe line can be laid fast by untrained workmen, using only a ratchet wrench to make the joints. No lead pot, no calking tools.

The Mechanical joint is designed on the stuffing box principle—a thick rubber-compound gasket, triangular in cross section, being compressed by a bolted gland or follower ring. The joint is bottle tight, but flexible to allow settlement, expansion or contraction of the pipe line. Mechanical joints are interchangeable with fittings, valves, hydrants and pipe made by all leading manufacturers.

For complete information, wire or write McWANE CAST IRON PIPE COMPANY, Birmingham, Alabama, or PACIFIC STATES CAST IRON PIPE COMPANY, Provo, Utah. (Sales Offices in principal cities.)

McWANE PACIFIC PIPE *Lasts for Centuries*

HERSEY WATER METERS

have been approved and recommended by many experienced water works engineers for their unusual reliability and accurate registration.

In addition, one of their real outstanding features is the consistent low-maintenance cost over a long period of time. REASON: Hersey has never been known to cheapen materials or slight workmanship to meet price competition. Very often a low-cost meter can prove an expensive long-time investment.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA — DALLAS — CHICAGO
SAN FRANCISCO — LOS ANGELES

Let's Clean Up Plant Choked Ponds

(Continued from page 125)

(b) 2,4,5-T brush killer applied at a 1 to 200 concentration.

(c) Sodium Trichloro Acetate applied at the rate of 100 pounds to the acre.

(d) 2,4,5-T brush killer plus Sodium TCA. The plot was thoroughly covered using a mixture volume that would equal about 200 gallons to the acre. The dilution factor was 1 plus 200 plus 100 lbs. to the acre.

In November 1952, four months after the original application, the results were in, and it was concluded at that time that the best annihilator was 2,4-D weed killer, with 2,4,5-T brush killer trailing by a neck. In fact, plots treated with 2,4-D were clear of all water lilies. The plots treated with Sodium TCA were still heavily infested with the bothersome lilies. However, when these plots were observed the following season, the difference between the treated plots of 2,4-D and 2,4,5-T were reversed. The residual control seemed to be somewhat better with 2,4,5-T.

In 1953, it was decided to spray the entire 80-acre lake by helicopter, using a 2,4-D ester weed killer. This was done using three gallons of the mixture per acre. A dilution factor of 10 to one was used, but the unsatisfactory results observed at the end of 1953 confirmed the suspicion that this dilution was far too weak.

After evaluating the results obtained from 1952 and 1953, it was decided that the pond should be given another application during the summer season of 1954—this time using a combination of the two best killers, 2,4-D and 2,4,5-T. In early August 1954 the entire pond was sprayed again by helicopter, with three gallons of mixture being applied to each acre. By the beginning of October it was obvious that the results were satisfactory. Practically all the water lilies had died off as shown in the photograph accompanying this article. The mixture used to accomplish this consisted of two gallons of water plus one gallon of concentrate containing two pounds of acid equivalent of 2,4-D and two pounds of acid equivalent of 2,4,5-T.

It is interesting that these plant growth regulator sprays do not kill the plants by poisoning them. Instead, scientists have found that they stimulate the plants to use up their food reserves faster than they can be replenished. Since the leaves manufacture the plant food by the process of photosynthesis and since the chemical is readily absorbed by the leaves and stems, the time of application of the chemical is important. The fast-growing stages of plants is perhaps the most vulnerable time.

It should be noted, however, that pond weeds, a monocotyledon plant differing from pond lilies, were not killed by the sprays that had been used. At the present time Park Commissioner Warren B. Arnold is experimenting with Sodium TCA to see whether the pond weeds can be controlled if they become a serious problem. At present they do not present a problem.

Well, there are the results. The conclusion that can be drawn from the experimental plots and also from the field work is that two chemical sprays now on the market: 2,4-D weed killer and 2,4,5-T brush killer can give excellent control of water lilies and hyacinths when used in the proper concentration.

NOW . . All Three At TRINITY VALLEY!
Available On Order
AWWA Standard Bell Spigot Watermain Fittings—24 through 36 inch.
Available Immediately From Stock
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Capacities to 150 G.P.M.

Heads to 600 Ft.

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—ideal for "1001" duties where small capacities and high heads predominate. Get acquainted.

AURORA CENTRIFUGAL PUMPS

are available in many types and sizes—all noted for their streamline coordination between impellers and shells.

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We Invite Your Special Pump Problems

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THE NEW YORK AIR BRAKE COMPANY

66 LOUCKS STREET — AURORA • ILLINOIS

HERE IS A REVOLUTIONARY NEW POCKET-SIZE LEAK DETECTOR

THAT WILL PAY FOR ITSELF IN ONE COMPLETE OPERATION

Sensitive—as only modern electronics knows sensitivity.

Compact—weighs only 2¼ pounds and fits conveniently into a coat or jacket pocket.

Simple—any maintenance man quickly learns how to use it. In one typical small city, meter readers used them to find an average of three leaks per day.

Rugged—Operating records show it working perfectly in all sorts of weather, even when handled roughly by different operators.

Efficient—one man can do a complete job of leak detection well. In one small city, these little detectors traced out leaks amounting to almost 10% of the daily pumpage.

Write for prices and complete information.

PRECISION ELECTRONICS CO.

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O'BRIEN STUMP CUTTER

Precision Built To Take Out Tree Stumps Faster, Better, Completely!

Eliminates **blasting, burning, digging!**

Distributor Inquiries Invited

Here is the inexpensive answer to your costly stump removal problems. The O'Brien Stump Cutter will cut out *any* size stump below the level of sidewalk or lawn area and reduce it to shavings! No traffic tie-up or sidewalk and curbing damage. Can be mounted on almost any tractor.

WRITE FOR COMPLETE DETAILS

Metal Parts Machining Corp.

WATERVLIET — NEW YORK

NEW BREMER CURB LOCK Controls Water Cut-Offs

- Saves Call Backs
- One Trip Installation
- No Need to Remove Meter
- Fits Most Sizes
- Controls Sub-Division Problem
- Controls Vacant House Problem
- Prevents Loss of Revenue
- Foolproof Locking Device
- Used When and Where Needed
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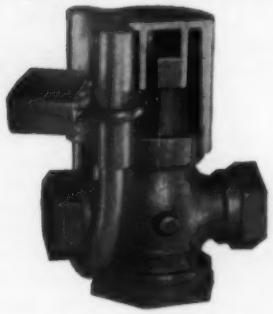
- Does Not Wear
- Will Not Corrode

A few territories still open. Interested distributors please write for details.



Developed in cooperation with Jacksonville, Florida Water Department

$3.95 each

F.O.B. Jacksonville, Fla.

From 1 to 5 Bremer Curb Locks per 100 services is usually sufficient to positively control water cut-offs

BREMER BREASE, inc.

1107 MARGARET STREET

JACKSONVILLE, FLORIDA

Miami Beach Makes Community-Cleanliness a Habit

(Continued from page 149)

week for single dwellings. This schedule is maintained year-round, despite the fact that our permanent population (50,000 persons) is almost tripled during the winter months.

Equipment

Our second step was to determine the kind and amount of equipment needed to maintain this schedule. We had studied refuse-collection equipment for a number of years and had concluded that only enclosed refuse-collection trucks could serve our purpose. The elimination of odors and wind-blown waste and the neat appearance of these trucks would reflect the kind of behavior we expected from our residents.

To be really efficient, refuse trucks must be easy to load to eliminate spillage and to prevent crews from becoming fatigued. It has been our experience that a tired man will neither take the precautions required to prevent unsightly conditions from developing nor handle refuse containers and container storage bins with care. Careless crews naturally discourage good habits throughout the city. The equipment also has to be safe and pleasant to work with so that crews would develop a sense of satisfaction in their work.

We needed equipment that would haul large refuse loads. Since we dispose of mixed refuse at the City of Miami's incinerator, an average 10-mile round trip through heavy traffic, maximum loads are necessary to reduce nonproductive travel time. Our study of equipment showed that only packer-type trucks would serve our needs.

How We Operate

In 1946, we purchased our first packer-type refuse bodies for mixed refuse collections. We now have 23 packers, the latest purchased in the fall of 1954. Two laborers and a driver are assigned to each truck and handle all refuse-collection, except swill from hotels and restaurants and cartons and boxes from stores. Swill is collected with five trucks equipped with enclosed bucket-loader bodies which suffice since swill doesn't require compaction. The vast amount of cartons and boxes which are discarded daily by our stores—especially those on Lincoln Road, "The Fifth Avenue of the South"—are collected by nine open-bodied trucks, of which three are semi-trailers.

All this equipment, of course, is needed full time only during our peak January-to-May vacation season. At such times loads are as heavy as 1,440 tons a week. This quantity diminishes to as little as 700 tons a week during the summer.

To hold expenses down as much as possible without cutting service under these conditions, two collection methods are used. The carry-out service we supply to single residences is facilitated by the use of plywood boxes, which crews fill with the refuse from several residences before making the trip to the truck. The second is the use of a truck-shuttle system in some sections of the city in order to eliminate nonproductive crew time as trucks travel to the incinerator.

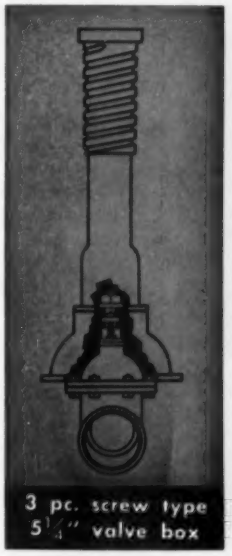
One of the best indications of the success of our refuse-collection schedules, equipment, and methods in developing habits of cleanliness is the improvement of refuse disposal and sanitation throughout the city, despite the big yearly increase in refuse produced since World War II and

BUFFALO PIPE & FOUNDRY

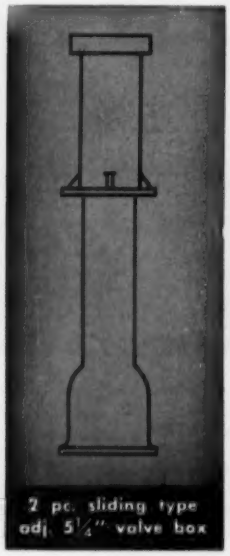
BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

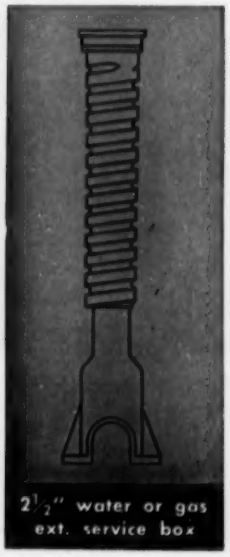
No matter what size, shape or style municipal casting you may desire — you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



3 pc. screw type 5¼" valve box



2 pc. sliding type adj. 5¼" valve box



2½" water or gas ext. service box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

Write or wire for Bulletin M11.

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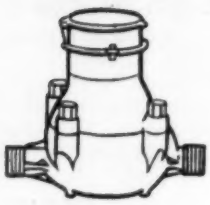
BUFFALO PIPE & FOUNDRY CORP.

BOX 55 – STATION B DE 6764 BUFFALO 7, N. Y.

True reading . . .

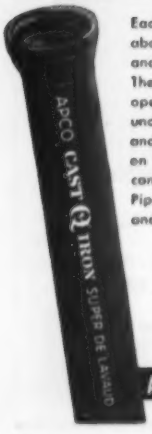


Round reading or straight reading dials . . . it makes no difference . . . with either, Calmet tells the truth about water usage.

CALMET

MANUFACTURED BY WELL MACHINERY & SUPPLY CO., INC.
FORT WORTH, TEXAS

TESTED AND RECORDED



Each length of pipe we manufacture passes through the above hydrostatic test press where it is filled with water and the pressure raised to 500 pounds per square inch. The most common water works pipe is designed for an operating pressure of 150 pounds per square inch. This undergoes the 500 pounds per square inch hydrostatic test and permanent records for each piece of pipe are kept on file for inspection by our customers at all times. You can be assured with Alabama's Super De Lavaud Cast Iron Pipe. In sizes of 3" to 24" in modern long lengths. Bell and Spigot, Mechanical Joint and Flanged Pipe.

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ALABAMA PIPE COMPANY
ANNISTON ALABAMA

No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is best for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

DOUBLES length of Filter runs. • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P.O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

the rise of the year-round vacation trade, which has been somewhat extraordinary.

Our second major waste-disposal problem, rapid year-round vegetative growth, also has been handled in a manner to promote maximum habits of community cleanliness. Shrubbery and tree trimmings, primarily palm tree fronds, make up 800 to 900 cubic yards of waste a day throughout the year, within the 8 square miles of our city's area. The peak of this waste production is in the spring and the beginning of November when the city's trees are trimmed.

We collect this waste once every two weeks to prevent its accumulation. The trimmings are neatly piled by the property owner between the sidewalk and the street. The material is loaded in semi-trailers by truck cranes equipped with clamshell buckets. One or two truck cranes that we own are out every day loading the trailers that haul this rubbish 20 miles to a dump where it is burned.

Tree Waste Disposal

After a hurricane, tree waste disposal is a problem. We may have as many as six truck cranes out and several dozen trucks (most of this equipment is rented for the emergency) which haul around the clock to clear up the debris left by fallen palms and other damage. The cost of this speedy operation is high, especially when a severe hurricane strikes as it did in 1950. It was then necessary to spend $300,000 to clean up the hurricane debris. However, rapid removal of all such waste emphasizes to citizens and visitors the importance that we place on community cleanliness.

We even extend our program to vacant lots. These are mowed regularly, and improved properties in the vicinity of garbage cans are sprayed frequently to insure adequate fly control.

We maintain a staff of five inspectors: four are assigned specific areas; the fifth checks on conditions at large throughout the city. These inspectors, members of the engineering department, also check and report any hazardous conditions, such as broken sidewalks and pavement. Their reports since 1946 show a definite progressive rise in the degree of cleanliness achieved by our citizens, visitors, and collection crews.

The total cost of the services we render to promote such over-all cleanliness is high by ordinary city standards. It totaled about $865,000 in 1954. Heavy hurricane clearing expenses, paid by a special fund, adds many thousands of dollars to this sum which is raised by general appropriations.

However, every dollar we have invested in these services has more than returned its value in building up our city as a "picture book" vacation land. The frequency and numbers in which visitors to our city return has made the return on this investment bigger each year. At the same time, our waste disposal program has benefited by achieving more economical operation because of the wholehearted cooperation of the general public.

Six Cities and One Microfilmer

SIX Michigan cities of 2,300 to 18,000 population have set up a cooperative microfilming program, according to the International City Managers' Association. The cities are Farmington, Garden City, Holly, Plymouth, Wayne, and Ypsilanti. Each will contribute $150 to buy a reconditioned 16mm automatic camera. Each city will buy its own $225 film reader and a $147.50 six-drawer file cabinet in which to store the film. The cities are preserving all court records and council minutes.

How a fast, compact TENNANT Sweeper...

City of Winston-Salem (N.C.) sweeps downtown walks with their Tennant "75" Sweeper.

sets a new standard in clean, LOW-COST sweeping

In busy downtown areas, where *clean* sweeping counts most, but is costly—a compact TENNANT Power Sweeper pays for itself fast. It not only *does the work of a crew of men;* it sets a new standard for clean work. You'll see the difference.

Sweeping easily around parked cars, its powerful brush-and-vacuum system rapidly cleans a 48" path. Picks up dust, dirt, paper, sand—the usual loose light litter found in gutters, on walks and in alleys. Does a remarkable job.

It's rugged . . . compact . . . easy to use; and superbly engineered for long, dependable service.

SPECIAL FEATURES

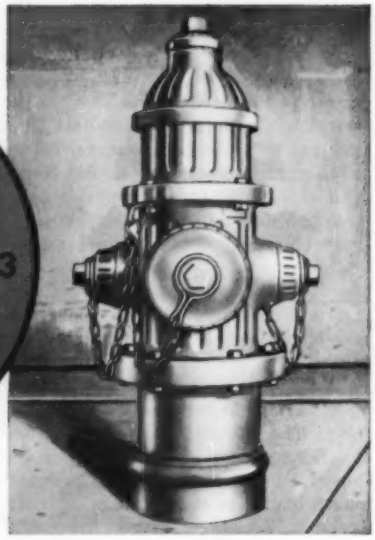
- Sweeps 4 to 8 times faster than by hand.
- Sweeps EXTRA CLEAN; has vacuum dust control.
- Dumps load mechanically.
- Cleans 48" path; can sweep flush with walls, curbs.
- Reverses instantly.
- Steers easily in traffic; has 38" wheelbase.
- Can also be used in PARKING LOTS, RAMPS, GARAGES, etc.

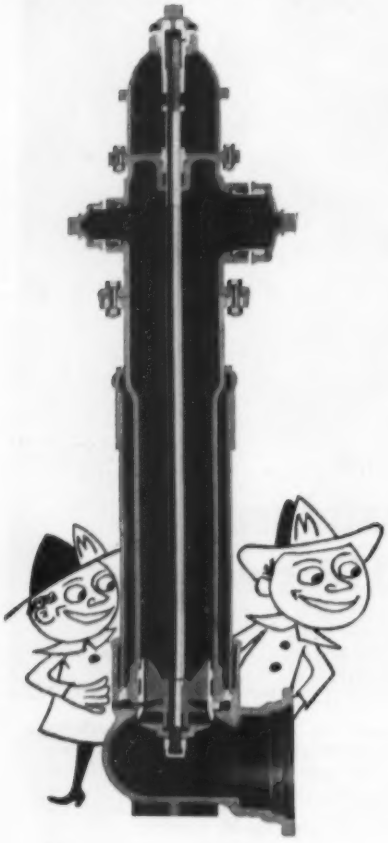
Write today for details.

G. H. TENNANT COMPANY
2520 N. 2nd St., Minneapolis 11, Minn.

TENNANT POWER SWEEPERS

SPECIALIZED MAINTENANCE EQUIPMENT





Replaced in less than half an hour

WITHOUT EXCAVATING

The Mathews Modernized Hydrant is the leader in its field because it is simple in design and quickly accessible for repair or replacement. Here are some of the outstanding features of the Mathews Modernized Hydrant.

The Replaceable Barrel. Contains all working parts and can be replaced with another in jig time *without excavating*. When the hydrant is broken in a traffic accident, fire protection is interrupted for less than 30 minutes!

Compression-Type Main Valve. The Mathews Hydrant uses water pressure to help tighten the valve. No leaks, even when the hydrant is bowled over by a truck.

Stuffing Box Plate. Cast integral with the nozzle section, eliminates an extra part and a flange joint. A stronger, safer, leakproof construction.

Operating Thread. The stuffing box plate prevents water and sediment from reaching the operating thread. No rust can form. No ice can jam it in cold weather.

All these other quality features: Head turns 360° simply by loosening bolts • Replaceable head • Nozzle sections easily changed • Nozzle level can be changed without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • A modern barrel makes an old Mathews good as new • Mechanical joint pipe connections optional

Send for this 80-page catalog. It contains full information about the R. D. Wood line of Cast Iron Pipe, Fire Hydrants, Gate Valves, and Hydraulic Machinery.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Getting Playground Areas In New Developments

(Continued from page 9)

This contribution is not mandatory, but is offered as an alternative to the 5% land dedication. In this way the city has obtained more satisfactory parks both in location and in size.

In ***Whittier, Calif.***, the city authorities require any subdivider seeking to have property annexed to the city to pay a fee of $50 an acre as a condition of the annexation. This money is used to provide necessary parks and recreation areas.

A fee of $25 per lot is assessed in ***Claremont, Calif.***, at the time of the approval of the final map of any subdivision. This money is placed in a fund with the City Treasurer. The fund is designated as the "Park and Recreation Facilities Fund," and can be used solely for the purpose of acquiring park and recreation land or facilities. If sufficient land for recreation is dedicated by the developer, the fee is waived.

Anaheim, Calif., last year passed an ordinance amending its municipal code so that a $25 charge on each lot in a new subdivision could be made. During the first few months in which the ordinance was in effect, about $2,000 a month was deposited from this source in a fund which will be used to purchase and develop for park use, land adjacent to school playgrounds.

In 1951, the Board of Aldermen of ***Wichita Falls, Texas,*** adopted a resolution requiring the dedication of land for park use equaling one acre for every 30 single-family units. The resolution further required that the land be centrally located so that, if possible, all units to be served are within ¼ mile of the park, and in no case farther than 1 mile.

Fellowship Available for An Experienced Administrator

A FELLOWSHIP available to an experienced public administrator at the state or local level to study in the Advanced Management Program of the Graduate School of Business Administration at Harvard University has been announced by the National Municipal League. The program consists of an intensive 13-week course of study for mature administrators, usually between the ages of 38 and 48. It is intended to train men who are regarded as capable of assuming greater responsibility in the future.

The holder of the National Municipal League fellowship during 1954 was Russell J. Cooney, city manager of Merced, Calif. Mr. Cooney declared that his experience in the management program was one that a public official "will probably cherish for the rest of his life and reap benefits from it for the rest of his years in public management."

Candidates for the fellowship may obtain application forms from Harvey P. Bishop, Director, Advanced Management Program, Graduate School of Business Administration, Harvard University, Cambridge, Mass. The deadline for applications is June 1 for the September 14 to December 9, 1955 session of the program. December 1 is the application deadline for the February 23 to May 18, 1956, session. A fellowship will be granted for one of the two sessions but not for both.

The award carries a stipend of $1,500. The total cost, including tuition, materials, medical fee, room, board, and personal expenses is approximately $2,500.

Aluminum Alloy Tapping Machine

The new HAYS Model B Tapping Machine, now made of High Strength aluminum alloy, is light, compact, efficient. The HAYS Machine takes up less room in the ditch, requires fewer operations, is easier to handle, easier to operate, speeds up installation of all standard makes of corporation stops.

Your HAYS distributor or our representative will be glad to demonstrate the Model B . . . or write us about one for a trial on the job by your own men.

- Only 36 pounds to handle
- Rugged construction
- Fast and simple to operate
- Renewable bearing bronze feed yoke insert
- No disassembly to insert Corporation Stop
- Complete with chest

HAYS® WATER WORKS PRODUCTS
HAYS MANUFACTURING CO.
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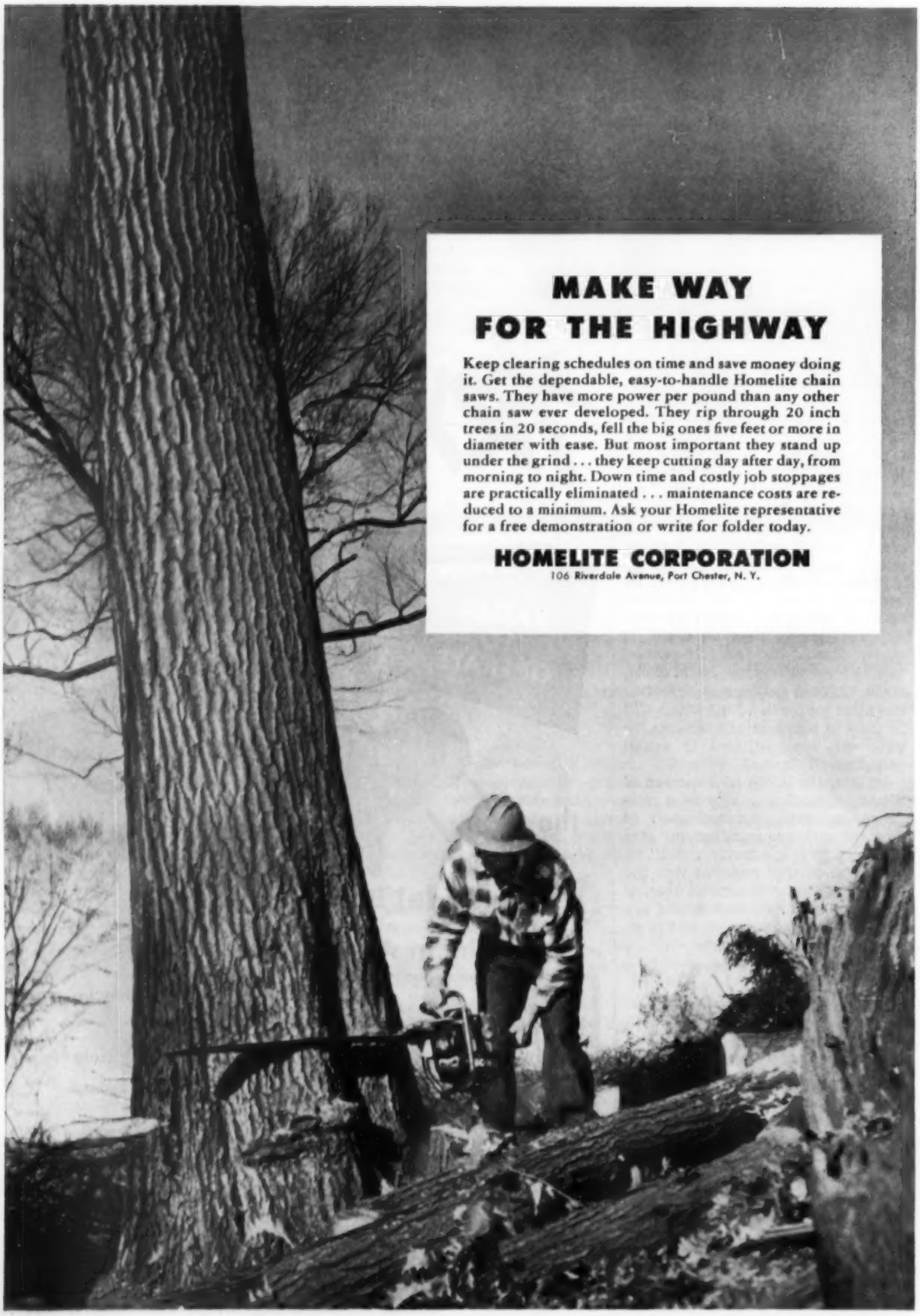
MAKE WAY
FOR THE HIGHWAY
Keep clearing schedules on time and save money doing it. Get the dependable, easy-to-handle Homelite chain saws. They have more power per pound than any other chain saw ever developed. They rip through 20 inch trees in 20 seconds, fell the big ones five feet or more in diameter with ease. But most important they stand up under the grind . . . they keep cutting day after day, from morning to night. Down time and costly job stoppages are practically eliminated . . . maintenance costs are reduced to a minimum. Ask your Homelite representative for a free demonstration or write for folder today.
HOMELITE CORPORATION
106 Riverdale Avenue, Port Chester, N. Y.

Federal Housing and Renewal Programs Attacked at NAHRO Confab

THE federal government's handling of its urban renewal and public housing programs was subjected to repeated criticism by speakers at the annual Middle Atlantic Regional Conference of the National Association of Housing and Redevelopment Officials, held in New York City late in April.

NAHRO president Walter B. Mills led off the attacks at the opening session with the unequivocal statement that "the program of low-rent public housing has been completely strangled by the unrealistic millstone around its neck of a 'workable program' and a restriction that the number of new units be in direct proportion to the families displaced by slum clearance."

Edward Barry, Chairman of the Board of the National Housing Conference, followed by upbraiding the government for restricting its program to only 35,000 new public housing units per year when, according to National Housing Conference estimates, the nation needs 200,000 public housing units per year. Finally in a luncheon speech, New York State Housing Commissioner Joseph P. McMurray, took an indirect swipe at the federal programs by announcing that he would not let his state housing programs "founder on the rocks of excessive and restrictive regulations."

Even a federal official, Herman D. Hillman, New York field office director for the Public Housing Administration, had some sour words to say about the national housing and renewal programs. Referring to the requirement that public housing units can be constructed only in communities that are undertaking slum clearance programs and there only in proportion to the families displaced, he said:

"Today . . . [in public housing] . . . we have the mission of 'relocation housing.' Because of the timing involved, this places us in something of a quandary. We are held to a late start and yet charged with catch-

(Continued on page 227)

POWER

EMERGENCY
PORTABLE
CONTINUOUS

Katolight GENERATORS and POWER PLANTS

Whether the need is for portable, standby or continuous power, Katolight furnishes it more efficiently at lower cost. Many models, your choice of air or water cooled gasoline engines of well known manufacturers. Up to 50 K.W. Also Motor Generator Sets, High Frequency Changers and Independent Generators up to 400 K.W.

Whatever your future municipal department power plans require, remember Katolight offers advanced, money saving features.

Write regarding your requirements.

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Box 891-25 Mankato, Minnesota

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ROCKER-JAW IS THE SECRET

C-S

METER WRENCH

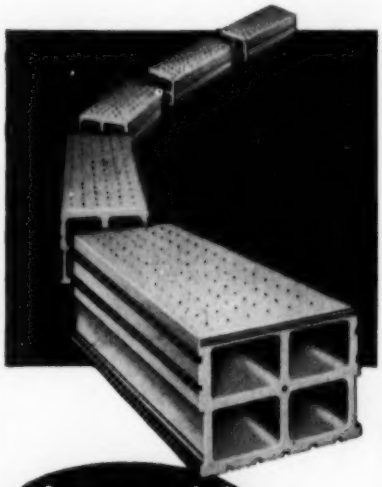
The First Real Answer to the Problem of Changing Meters in the Box.

- Fits All Size Meter Nuts ½" to 1"
- Rachets in Short Arc
- Self-Adjusting Bottom Jaw
- Grips Hard But Loosens Easily
- Saves Many Times Its Price in Labor

Order today on our money back guarantee

CITIES SUPPLY CO.
Sumter, South Carolina
SOLE DISTRIBUTORS
JOBBER INQUIRIES INVITED

More Popular Every Day...



Leopold

Glazed Fire Clay
Tile Filter Bottoms

During 1954 more Leopold duplex filter bottoms were sold than in any previous year in our history. To date, there are well over 300 plants (with a daily capacity in excess of 1¾ billion gallons) that have selected Leopold bottoms—including such major municipal installations as Phoenix, Arizona; Houston, Texas; Trenton, New Jersey; Detroit, Michigan; Baltimore, Maryland; Columbus, Ohio; Kansas City, Missouri; Omaha Nebraska; and Philadelphia, Pennsylvania. Represented in this group are the five largest municipal filter plants under construction in the country at this time.

There are, of course, good reasons why the Leopold Glazed Tile Filter Bottom is getting more popular every day. In this design, laterals and distributing blocks are combined in one permanent unit that insures equal distribution and uniform filtration. The individual blocks are made of de-aired fire clay, vitrified and salt glazed. They resist corrosion, are not subject to tuberculation, won't absorb any detrimental amount of water, are impervious to acids and alkalis, and will last indefinitely.

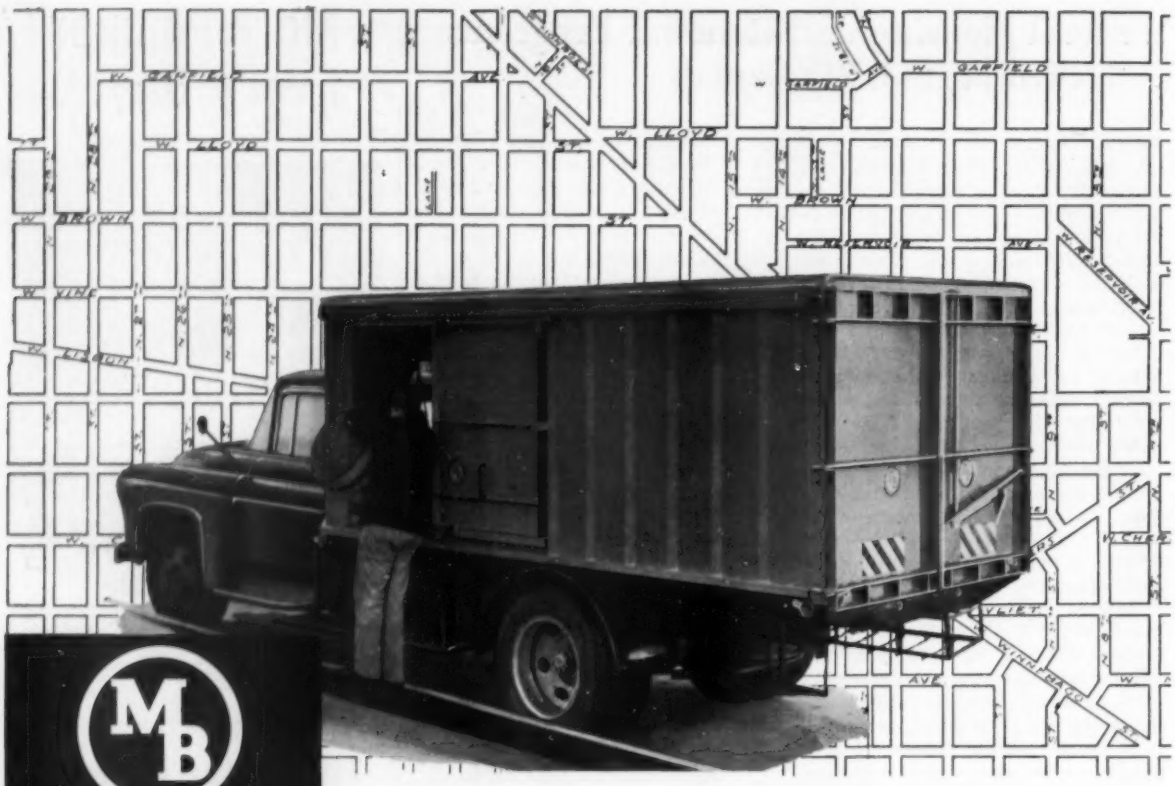
If you're looking for a practical, economical solution to your underdrain problems, consider the advantages offered by Leopold. We'll be glad to supply details—without obligation.

Look to Leopold for complete water purification and sewage plant equipment...

- Dry Chemical Feeders
- Mixing Equipment
- Filter Operating Tables
- Filter Bottoms

Write today for details

F. B. Leopold Co., Inc.
2413 W. Carson Street
Pittsburgh 4, Pa.



MB PACKER ...more blocks of collection per day

M-B Loads Faster. Load through large doors from either side of Packer. Load large bulky items through rear door without pre-crushing.

M-B Packs Faster. Complete packing cycle takes only a matter of seconds. Powerful compaction means far fewer compaction cycles per load.

M-B Unloads Faster. Entire load is ejected out the rear doors — fast and safe.

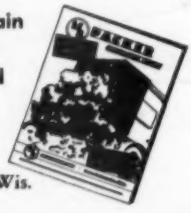
Many cities and contract haulers are finding that they can make more collection stops per day — cover more blocks — increase route lengths, and do so with fewer collection units and at less over-all cost, since installing M-B Packer Bodies.

Powerful compaction permits packing more tons per load — means fewer "dead" runs to dump and back. M-B Bodies load faster and handle a huge volume before it is necessary to compact — resulting in fewer time-consuming compacting cycles — saves time, wear and tear on mechanism, and fuel.

Before selecting your next collection unit, get all the facts on the M-B Packer — remember — *it's the number of collection stops per day that counts*

OUTSTANDING IN EVERY WAY

- COSTS LESS to own — operate — maintain
- SAFEST in every phase of operation
- POWERFUL, PROGRESSIVE COMPACTION
- VERSATILE — use as general truck



Send for free catalog

write M-B Corp. New Holstein, Wis.

MB CORPORATION
NEW HOLSTEIN, WIS.

PACKER BODIES • SWEEPERS • LINE MARKERS
PAINTS AND BEADS

MANUFACTURERS
OF QUALITY MUNICIPAL AND
CONSTRUCTION EQUIPMENT SINCE 1907

The City Tells Its Story

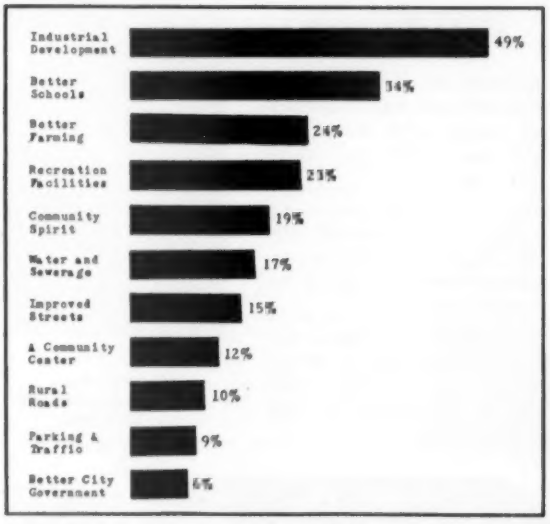
(Continued from page 141)

not be tied in with a political party too closely because, if the people get the idea that the PR program is designed primarily to keep men in office, they are not going to pay much attention to it. I would like to say that the public relations office of a municipality should never be a patronage job.

The public relations person, whether he be an individual or part of the staff of a PR firm, should be given a relatively free hand to use facts. He must work at the policy level and be in a position to say "no" when he thinks no . . . for he must have the opportunity to advise honestly if his help is to have any value.

The way our office works depends on the need of a particular community. For some, we survey PR needs and devise a program which the city then carries out on its own. In other cases, we are called in for a specific project: a $25,000 allocation for a new recreation program; a bond issue; a new construction program. For some of our clients we make monthly reports to the people. For others we do, in addition, an annual report. In many communities we are available for full PR service, including press relations, special promotions, evaluation of results, and other day-by-day PR work. Why should a municipality use a public relations firm? We find that smaller cities need expert help in MPR, but cannot afford a fulltime person. The agency is a good solution. Then, the cities we serve get the benefit of the collective thinking of the several persons on our staff—people who have worked with similar problems in other communities.

Community Needs Surveyed in Mississippi



The greatest needs or problems faced by communities in Mississippi are shown in the above chart, which was compiled from statistics gathered from 754 community leaders in Mississippi's cities, towns, and rural areas. The Social Science Research Center of Mississippi State College conducted the survey by asking individuals active in local agriculture, business, education, health, government, and other areas to name the three biggest needs or problems facing their communities.

Exclusive Ranney screened laterals collect huge volumes of naturally filtered water
The Ranney Method Assures a Pure, Sanitary Water Supply
Natural Filtration
The RANNEY METHOD, by Natural Filtration, produces water of better chemical quality than ground water . . . as proven by the many RANNEY installations now in operation. Each delivers millions of gallons per year of clear, non-turbid water at lowest cost. The RANNEY method reduces, or eliminates entirely, costly filter plants.
If you need an efficient, economical water supply...
RANNEY METHOD
Water Supplies Inc.
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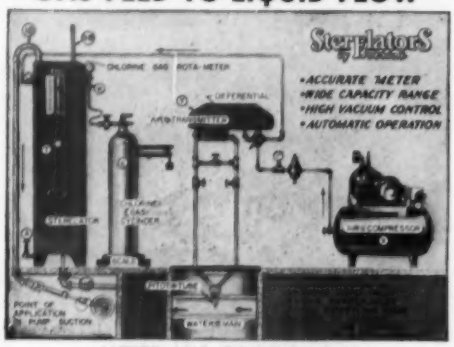
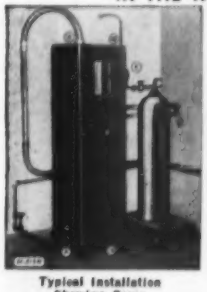
Associate: Ranney Method Western Corp.

AUTOMATIC PROPORTIONING GAS FEED TO LIQUID FLOW



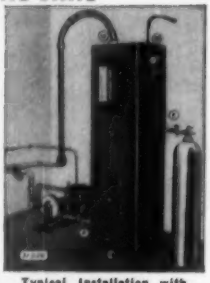
METER AND CONTROL GAS IN THE NON-CORROSIVE STATE



Typical Installation Showing Scale

SOLUTION FEED

MANUAL CONTROL OR SEMI-AUTOMATIC



Typical Installation with Booster Pump on Water Supply

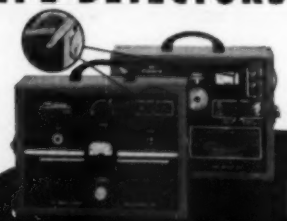
Everson Manufacturing Corp.

203 W. HURON ST. CHICAGO 10, ILL., U. S. A.

It's True There are Other "Good" PIPE DETECTORS

and EACH ONE WILL PERFORM ALL THESE JOBS:

- Detect, trace and center pipes, cables, etc.
- Estimate their depth
- Separate parallel pipes, cables, etc.



Model 505 Pipe Detector

But... Do They Have ALL These "505" Features

1. ALUMINUM CASE shields the loops from outside interference and is light — durable — repairable.
2. BUILT-IN BATTERY TESTERS plus 67½ V batteries insure maximum service, more efficiency, more power.
3. QUICK-ACTION ALUMINUM HANDLE set up in seconds for one man operation.
4. LIFETIME GUARANTEE assuring reliable performance for the entire life of instrument.

Also Available: Model 505-C Combination Pipe-Leak Detector

Get the complete "505" story — write Dept. 54

Detectron® The DETECTRON Corp.

5528 Vineland, North Hollywood, Calif.

Power Thread and Cut

½" to 8" Pipe *on the job*

The 26 lb. PORT-A-PONY Power Drive saves you time and money threading pipe . . . *in place!*

- Also pulls wire through conduit, drives winches, opens and closes valves.
- One man, one hand unit.
- Adaptable to all popular die stocks.
- Powerful ½ HP AC-DC reversible motor.

WRITE FOR FULL INFORMATION

THREAD-EZY MFG. Company

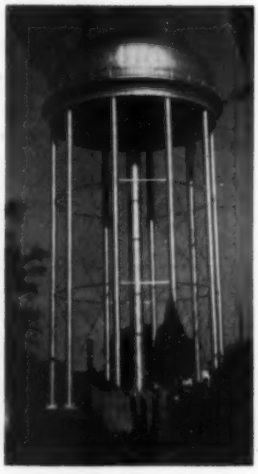
336 North Brady Street Corunna, Michigan

A CENTURY OF EXPERIENCE IN TANK DESIGN

● Established in 1854, COLE elevated tanks have provided a dependable water supply for mills and communities.

COLE quality is assured by careful, experienced designing and watchful supervision from blueprint to finished tank.

Send us your inquiries for tanks from 5,000 to 2,000,000 gallons—stating capacity, height to bottom, and location.



● Write for latest Cole catalog—*Tank Talk*. ●

R. D. COLE

- TANKS
- TOWERS
- CYLINDERS
- VESSELS
- STANDPIPES

Manufacturing Co., Newnan, Ga.

(Continued from page 223)

ing up. We must have our low-rent public housing ready for the displacees when slum clearance gets under way, but slum clearance under the [1954] law must be at work before us. Here an overlooked paradox wastes, perhaps, some of the force of our attack."

What all of the griping boiled down to in the end, was the determined hope by the professional housers on both the local and federal levels that the present 84th Congress would set right the inconsistencies and mistakes committed in last year's 1954 Housing Act.

While dissatisfaction made most of the news at the conference, practical sessions were held on the techniques of maintaining existing public housing projects, on the use of and results to be expected from community housing codes, and the techniques of redevelopment. At the business session of the conference, Gerald J. Carey, assistant to the Chairman of the New York Housing Authority, was reelected to the presidency of NAHRO's Middle Atlantic Regional Council.

Community Action to Provide More Jobs

HERE is a summary by the President of the Southern Railway System, Harry A. DeButts, of Washington, D. C., of his address on Community Action to Provide More Jobs, presented before the section on Industrial and Trade Area Development at last month's annual meeting of the Chamber of Commerce of the United States:

- Give your industrial development executive all the help and cooperation he needs
- Get the support of your existing industries
- Inventory your plant sites and reserve them for industrial purposes
- Recognize that your community may be better suited to certain types of industry
- Have readily available the basic information needed by industrial prospects
- Have a small but competent "selling" organization which can present and intelligently discuss your plant sites.

Above all, have your workers understand their self-interest in industrial growth, the part they can play in attracting new industry, and the benefits that will accrue to them in the form of enlarged work opportunities which they will gain for themselves and their children.

125# Valves...drop tight!

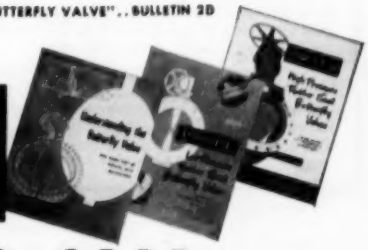
Will not "freeze" from corrosion— *Corrosion can't hinder operation.* Disc edges are chrome plated or stainless steel and close into a thick rubber seat. These features plus self lubricated bearings and stainless steel shafting make it impossible for valves to "corrode tight" either open or shut.

Full 90° closure into Rubber Seat— The disc is slightly larger than the inside of the rubber seat and thus actually displaces the rubber when closed. The ratio of seat thickness to disc indentation insures drop-tight shut off and avoids permanent set. The seats are secured in the valve body by removable keeper segments.

Saves space. Even these high pressure valves are compact, easy to install, and require little head room. Available from 10" to 72" diameter in either cast iron or fabricated steel. A variety of operator types can be supplied.

SEE US AT THE A.W.W.A. CONVENTION IN CHICAGO JUNE 12 THROUGH 17, 1955. BOOTHS 52 AND 53

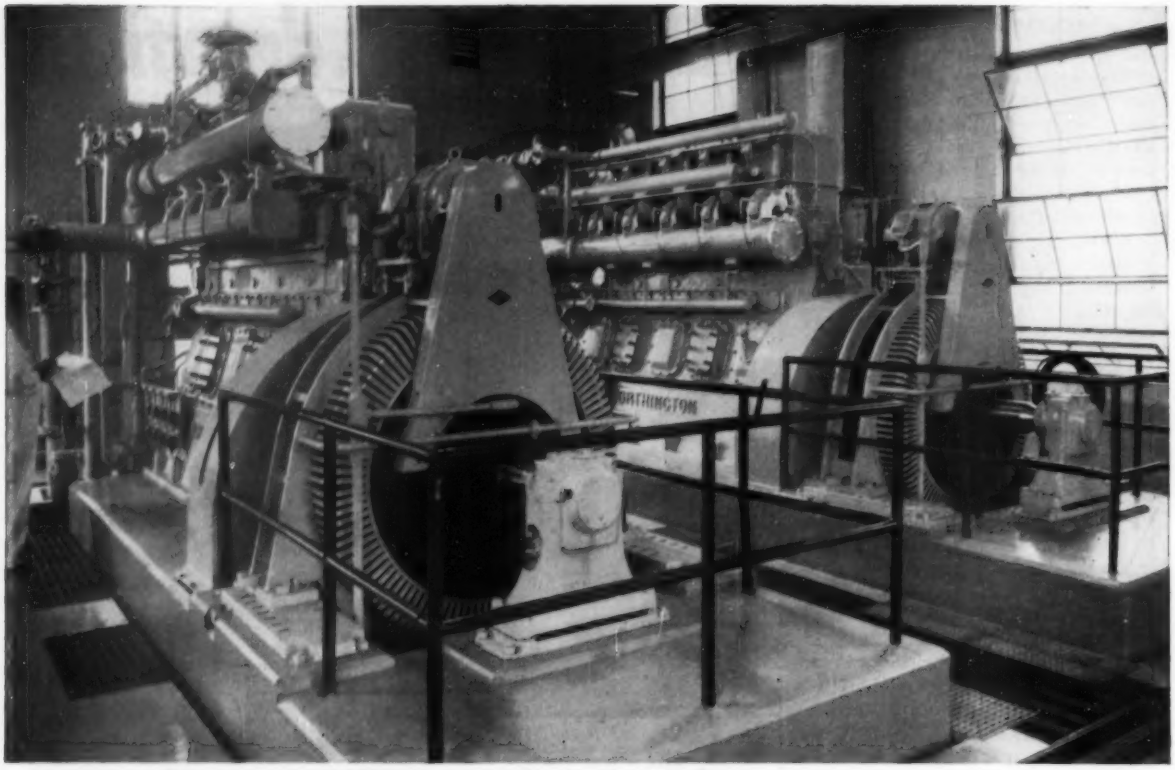
WRITE FOR COMPLETE DETAILS: "UNDERSTANDING THE BUTTERFLY VALVE"..BULLETIN 3D
LOW PRESSURE VALVES..BULLETIN 1D
HIGH PRESSURE VALVES..BULLETIN 4D



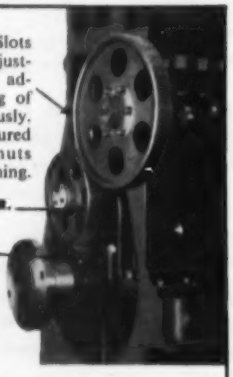
HENRY PRATT

RUBBER SEAT
Butterfly Valves

Henry Pratt Company, 2222 S. Halsted St., Chicago 8, Ill. Representatives in principal cities



SERVING ALL OF TAMPA, the new sewage plant is powered by these two Worthington engines, with a total output of 435 kw.



MAIN CAMSHAFT GEAR. Slots in gear provide single adjustment for retarding or advancing injection timing of all cylinders simultaneously. Final gear adjustment secured with castellated locknuts wired after final tightening.

FREE FLOATING IDLER GEAR.

SPLIT GEAR KEYED ON CRANKSHAFT. Permanent adjustment for perfect alignment with idler gear is easily accomplished.

WORTHINGTON HELICAL STEEL GEAR TRAIN

1. Provides accurate and positive control of engine timing.
2. Is located at flywheel end of engine for smooth gear operation as power impulses are absorbed by the flywheel.
3. Uses controlled automatic oil jet lubrication that eliminates wear.
4. Assures correct engine timing . . . keeps engine running smoothly . . . results in low fuel consumption and minimum engine maintenance.

Worthington engines power Florida's largest sewage plant

Tampa's new sewage treatment plant, Florida's largest, was built in 1950 to keep pace with the city's fast-growing population — which has almost doubled since 1947.

All electrical power for this modern plant is supplied by two Worthington engines; one a spark-ignition gas engine, the other a dual-fuel Diesel. Each drives an Electric Machinery Company generator.

Both engines operate on sewage gas produced during the treatment of raw sewage. When the supply of sewage gas tapers off, however, the dual-fuel Diesel is switched over to Diesel oil.

Operating records of scores of sewage treatment plants show that you just can't beat Worthington engines as economical, dependable power producers. Get all the facts for yourself by writing to Worthington Corporation, Engine Division, Section E.4.7, Buffalo, N.Y. E.4.7

"SEE the Worthington Corporation Exhibit in New York City. A lively, informative display of product developments for industry, business and the home. Park Avenue and 41st Street."

WORTHINGTON

Economical, Continuous Power — Diesels, Dual-Fuel and Spark-Ignition Engines, from 200 to 5,000 bhp.

Training for Effective Community Action

THE New York State Citizens' Council, Inc., announces that its Eleventh Annual Institute of Community Leadership will be held this year, June 16-19, at Hobart College, Geneva, N. Y.

The Institute has the cooperation of more than 40 agencies and organizations, and attracts an excellent representation of persons active in community organization work and other professionals and volunteers brought together by a common interest in more effective ways of solving community problems.

For program and further details, apply to Mrs. Dorothy J. Mial, Institute Director, 613 East Genessee St., Syracuse 2, N. Y.

Status of Contracts For Public Units Under 1954 Housing Act

BY late April, Somerville, Mass., and Clarksville, Tenn., were the only cities in the country that had managed to hop over all the administrative hurdles leading to federal aid for public housing. With the signing of contracts with the Public Housing Administration, Clarksville will get 100 new units and Somerville, 42 units. The contracts are the first to be entered into by the Public Housing Administration since June 30, 1954, and they are the first to conform to the requirements of the Housing Act of 1954.

With congressional authority to contract for 35,000 units by June 30, 1955, and with time-consuming administrative requirements bogging down housing-hungry cities in their attempts to get the desired units, PHA, in all probability, will have a substantial package of uncommitted units left over after the deadline. In fact, only 25,000 of the available units have been reserved for specific cities throughout the country.

In commenting on this situation recently, PHA Commissioner Charles E. Slusser said: "We will do all possible between now and June 30, the end of the current fiscal year, to place under contract all of the 25,000 low-rent units which we have, to date, earmarked for local housing authorities. Both PHA and the local authorities are, however, up against a difficult deadline, imposed in the Housing Act of 1954, when these contracts for the additional 35,000 units authorized under that Act must be executed."

The cities for which housing is earmarked, provided they can complete the contract requirements by June 30, are:

Local Housing Authority	*Units Allocated*
ALABAMA	
Auburn	50
Birmingham	750
Eufaula	150
Florence	50
Mobile	407
CALIFORNIA	
Calexico	30
DISTRICT OF COLUMBIA	1,500
ILLINOIS	
Chicago	3,800
Chicago Heights	200
KENTUCKY	
Newport	50
MASSACHUSETTS	
Somerville	192
MINNESOTA	
Minneapolis	650
MISSOURI	
St. Louis	1,474
NEW YORK	
New York City	8,000
North Tarrytown	60
OHIO	
Cincinnati	900
Hamilton	150
PENNSYLVANIA	
Philadelphia	1,818
TENNESSEE	
Clarksville	100
Gallatin	100
Lewisburg	140
PUERTO RICO	5,052
TOTAL	25,623

All from ONE Source!

SIGNS AND SUPPLIES for EVERY CITY

In addition to our huge stock of plain and reflectorized standard signs, we carry a complete stock of Traffic Control Equipment, including:

- Traffics Signals
- Street Marking Stencils and Buttons
- Traffic Cones
- Traffic Paint
- Line Marking Machines
- Police Equipment

Every order processed promptly. Reasonable prices. Money-back guarantee.

Immediate Delivery

WRITE FOR 50-PAGE CATALOG

SARGENT-SOWELL

"Satisfaction Guaranteed or Your Money Refunded"

P. O. Box 1176 Grand Prairie, Texas

Longer Trips and Bigger Loads with the WHITE 3000 in INDIANAPOLIS

INDIANAPOLIS city officials stepped up specifications to handle bigger loads with new 16-yard disposal bodies.

The result: this fleet of new White 3000's makes longer trips, fewer return trips and improves collection service.

White dependability, too, will keep these "White Wings" rolling at low operating cost . . . for *more* years.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

Tips its cab to service!

White

***Plus* ALL THESE IMPORTANT EXTRAS**

- ✓ **OUTSTANDING MANEUVERABILITY**
  - 127½-inch wheelbase
  - Wide-tread front axle
  - Shorter turning radius
- ✓ **EXCLUSIVE SAFETY FEATURES**
  - Wide-angle vision
  - 3-man cab
  - Improved braking
- ✓ **WHITE QUALITY** for low maintenance and longer truck life.
  - Powerful Mustang Engine
  - Rugged clutch
  - Model 107C rear axle, 7.17 ratio
  - Model 502B transmission

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

Nationwide Civil Defense Test on June 15, 16, 17

A NATIONWIDE civil defense exercise called "Operation Alert 1955" will be held on June 15, 16, and 17. The test will assume that nuclear attacks have been made on 50 of the 92 critical target cities of the continental United States. Additional attacks on cities in the territories and possessions will be assumed.

The purpose of the test is twofold; first, to determine the present status of civil defense preparedness throughout the country; and second, to test the federal government's program for relocating and continuing the operation of its essential wartime functions while the nation is under nuclear attack. The movement of approximately 15,000 federal employees from the District of Columbia and seven unannounced cities will be involved in this latter phase of the test. Cabinet officials and the heads of key mobilization agencies will join in the exercise.

Cities designated for simulated attack are:

CALIFORNIA
Los Angeles
Oakland

CONNECTICUT
Bridgeport
Hartford
New Britain
New Haven
Waterbury

DELAWARE
Wilmington

DIST. OF COLUMBIA

ILLINOIS
Chicago

INDIANA
Fort Wayne
Gary

MARYLAND
Baltimore

MASSACHUSETTS
Boston
Fall River
New Bedford
Springfield
Worcester

MICHIGAN
Flint

MISSOURI
St. Louis

NEW JERSEY
Camden
Elizabeth
Jersey City
Newark
Paterson
Trenton

NEW YORK
Binghamton
New York City
Niagara Falls
Rochester
Schenectady
Syracuse
Utica

OHIO
Akron
Cleveland
Toledo
Youngstown

OREGON
Portland

PENNSYLVANIA
Pittsburgh

RHODE ISLAND
Providence

VIRGINIA
Norfolk

WASHINGTON
Seattle

WISCONSIN
Milwaukee

ALASKA
Anchorage
Fairbanks
Juneau

CANAL ZONE
Balboa Heights

HAWAII
Honolulu

PUERTO RICO
San Juan

Seven additional cities to be subjected to hypothetical attacks without prior announcement are to be selected from a list of 49 other target cities.

To enforce this...

you need CYCLONE FENCE!

TO KEEP BIG, BUSY AIRPORTS operating smoothly and safely takes a considerable amount of traffic regulation. And to enforce these regulations takes more than a politely worded sign. That's why so many municipal authorities responsible for these vital projects insist on the best fencing they can buy. And this more often than not means Cyclone Chain Link Fence.

You can buy cheaper fence than Cyclone, but it will cost you more per year. Nothing but brand-new, top quality material is used throughout. Posts and top rails are heavy and rigid. Gates won't drag. The chain link fabric is woven from heavy steel wire and galvanized *after* weaving for resistance to rust and corrosion. And Cyclone is erected by full-time, well-trained experts—so that it will stay trim and good-looking.

If you are faced with any municipal fencing job—whether for vital projects or recreation areas—why not find out about Cyclone Fence? We will be glad to supply information without obligation.

NO JOB IS TOO LARGE—NO JOB IS TOO SMALL FOR CYCLONE*

CYCLONE FENCE DEPT., AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL CORPORATION
WAUKEGAN, ILLINOIS · SALES OFFICES COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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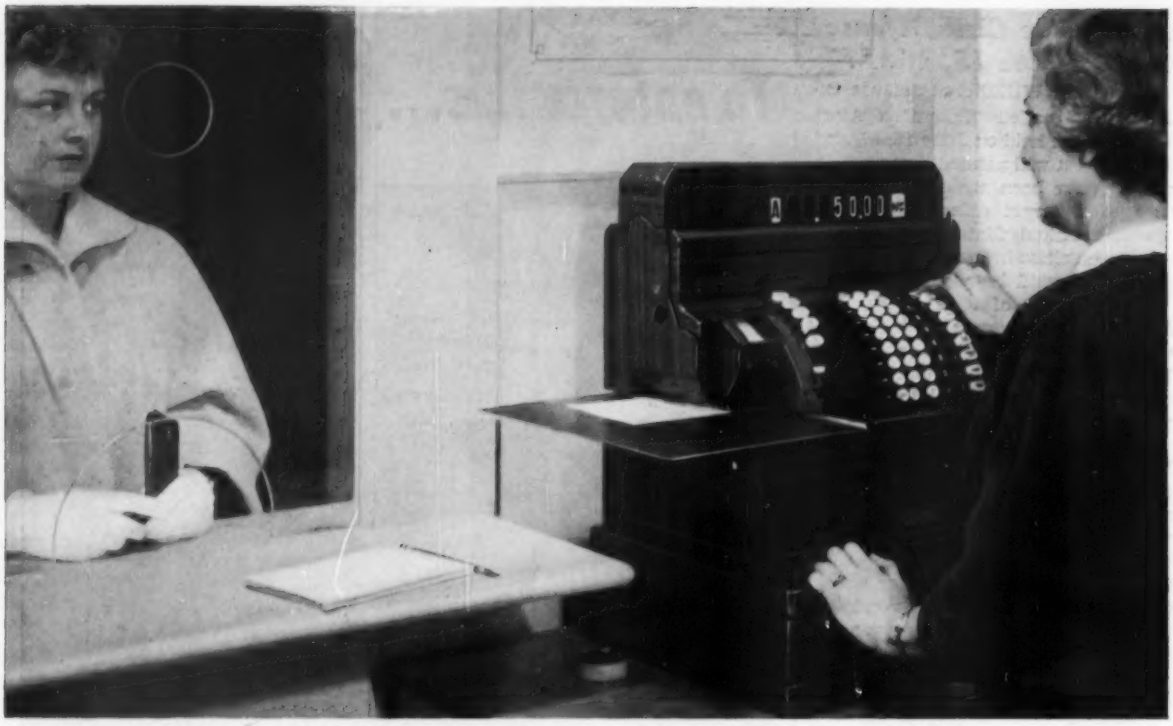

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CASH REGISTERS • ADDING MACHINES

ACCOUNTING MACHINES

Los Angeles' Ozone Sniffer Joins Smog Battle

THE Los Angeles Air Pollution Foundation has just developed a photoelectric instrument that measures ozone automatically, around the clock. The design of the instrument has been made available to the County Air Pollution Control District which is expected to order three additional devices to be constructed.

According to Dr. Lauren B. Hitchcock, president and managing director of the Foundation, ozone is generally accompanied in the atmosphere by other suspected smog formers, such as oxides of nitrogen. The ozone is believed to be responsible for much of the eye-irritating effects of smog. Normally, the atmosphere contains no more than 0.03 ppm (parts per million) of ozone, but in smog concentrations, it may be as high as 0.50 ppm. A concentration of 1.5 ppm is believed injurious.

A Crusade for a Cleaner America

THIS POSTER and other printed matter that will be found helpful in local campaigns for a cleaner America are available from Keep America Beautiful, Inc. The objective of this national nonprofit public service organization is to increase understanding and to encourage continuing public action on the problem of keeping America's roadsides, and public areas free from litter.

In executing this program, Keep America Beautiful has the advice and assistance of an Advisory Council composed of leading public service organizations and agencies. Financial support for this important civic movement (the organization of which was reported in THE AMERICAN CITY for July 1954, page 18) comes principally from American business, large and small—on the premise that a clean outdoor America is good for business and public welfare alike.

John Rose is executive director, with headquarters at 100 Park Ave., New York 17, N. Y.

Missouri Town Elects First Mayor in 70 Years

FENTON, Mo., elected its first mayor in 70 years during recent Missouri municipal elections. The honor is held by Garrett Hitzert, a local hotel operator in the 291 person town in southwest St. Louis County.

Fenton's previous mayor took office some time in the late 1880's. After that, the residents "just got tired of voting." Lately, however, they also got tired of not having sewer and water systems, so they decided on another election.

Mayor Hitzert, who described his new post as a "nice gesture," plans to go forward with the expansion of Fenton and with the development of the sewer and water systems. He will have the help of six other city officials who were elected without opposition.

—Based on a news story in the ST. LOUIS DISPATCH, *April* 6, 1955.

IT HAS JUSTIFIED ITS CAPITAL INVESTMENT MANY TIMES OVER

This town of 6,000 people could not afford

A TRACTOR
AIR COMPRESSOR
BACKHOE
LOADER

So they brought in a PNEUMATRACTOR for a trial and refused to return it because

It loads sand in winter
Excavates for sewer and water main repairs
Breaks up frozen ground
Drills ledge rock, and
does dozens of other jobs

YOUR TOWN NEEDS ONE, TOO.

Write for Catalog 5540

SCHRAMM, INC.
WEST CHESTER PENNSYLVANIA

Members of Water & Sewage Works Booked for the

A. C. F. Industries, Inc.—Detroit, Mich.—**1953**

Airkem, Inc.—New York, N. Y.—**1954**
John von Bergen

Alabama Pipe Company—Anniston, Ala.—**1952**

Albert Pipe Supply Co., Inc.—Brooklyn, N. Y.—1947

Allis-Chalmers Mfg. Co.—Milwaukee, Wis.—**1909**

American Cast Iron Pipe Co.—Birmingham, Ala.—**1912**
J. W. MacKay, W. W. Wolfe, L. C. Parnell, T. M. Starnes, H. M. Lange, J. B. Hill

American Foundry & Mfg. Co.—St. Louis, Mo.—**1909**

American Oil & Supply Co.—Newark, N. J.—**1950**

American Pipe & Construction Co.—Los Angeles, Calif.—**1933**
E. E. Brainard, C. W. Hopp, C. D. Herlihy

American Well Works, The—Aurora, Ill.—**1942**

AquaMatic Inc.—Rockford, Ill.—**1952**
J. E. Dymond, R. A. Whitlock, Jr., C. Walters

Armco Drainage & Metal Products, Inc.—Middletown, Ohio—**1929**
R C. Beam, R. E. Barnard, T. H. Bell, R. O. Hayes, T. A. Harrison, R. Kimbrough, W. M. Black, A. F. Rushton, G. B. Names, W. Schwamb, K. Rump, W. D. Wolfe

Bacharach, Inc., E. W.—Kansas City, Mo.—**1943**
T. C. Hersey, E. W Bacharach

Backflow Engineering & Equipment Co.—Los Angeles, Calif.—**1939**
F. Carlton, L. L. Snyder

Badger Meter Mfg. Co.—Milwaukee, Wis.—**1909**
J. O. Wright, W. C. Wright, J. E. Johnston, P. J. Berner, R. J. Burns, J. G. Valentino, Sr., J. Way, N. H. Abrams, C. Floyd, Jr., A. C. Hollowell, R. Olsen, M. Tarshis, H. G. Richards, E. L. Holzhaeuser, W. O. Dreyfus, H. DePagter, R. Ausprung, C. Bruck, R. C. Campbell, E. J. Canton, R. Chipman, A. Crooke, J. M. Estes, III, T. R. Finley, T. M. Gentry, J. B. Ferguson, J. M. Hammond, G. L. D. Hansen, R. H. Hollister, T. Hutcheson, J. Levy, L. Kuhfeldt, C. Lynch, R. E. Loomer, H. D. Mendenhall, F. J. Patton, N. W. Radmer, R. W. Roberts, E. D. Smith, Jr., E. A. Smith Sr., R. L. Stookey, P. A. Timme, J. G. Valentino, Jr., R. S. Walters, W. C. Whipple, J. F. Whitaker, E. J. Wooten, R. F. Wynne, R. F. Yellam, R. Moon

Baker & Company, Inc., R. H.—Huntington Park, Calif.—**1941**
E. H. Schustack, T. F. Phinny, R. S. McGhie

The Barrett Division, Allied Chemical & Dye Corp.—New York, N. Y.—**1937**
B. C. Cowart, J. R. Hagerman, F. J. O'Leary, F. M. Hieronymus, E. C. Maxwell, J. C. Matthews

Basalt Rock Company, Inc.—Napa, Calif.—**1950**

B-I-F Industries, Inc.—Providence, R. I.—**1909**
G. W. Kelsey, M. E. Rogers, J. R. Hartley, P. Bowen, A. E. Hatch, Jr., C. G. Haire, H. N. Armbrust, R. J. Leveque, P. A. Coffman, Jr., V. Langworthy, S. R. Amylon, G. E. Riepe, F. P. Pfeffer, J. J. Kriz, H. D. Bugg, J. E. Ward, B. Anderson, T. V. Voetgli, E. F. Morey, Jr., L. H. Chamberlain, J. B. Cook, Jr., A. W. Carpenter, R. Lindsey, P. K. Francescon, C. K. Perkins

Bingham & Taylor Corp.—Culpeper, Va.—**1928**
W. F. Quinn, J. H. Gardner

Brooks Products, Inc.—Pasadena, Calif.—**1927**

Buffalo Meter Company—Buffalo, N. Y.—**1908**
H. F. Barrett, W. G. Carter, J. I. Duus, J. E. Moses, C. E. Beatty, J. D. Angie

Burroughs Corporation—Detroit, Mich.—**1948**

Byers Company, A. M.—Pittsburgh, Pa.—**1924**
B. M. Byers

Byron Jackson Co.—Los Angeles, Calif.—**1952**
D. Metz

Calgon, Inc.—Pittsburgh, Pa.—**1939**
O. Rice, J. P. Kleber, G. Illig, A. L. Soderberg, T. M. Nourse

Carter Company, Ralph B.—New York, N. Y.—**1941**

Central Foundry Company—Newark, N. J.—**1919**

Centriline Corporation—New York, N. Y.—**1940**
W. E. Borbonus, K. K. Kirwan, A. G. Perkins, W. R. Kell

Chain Belt Company—Milwaukee, Wis.—**1941**

Chapman Valve Mfg. Co.—Indian Orchard, Mass.—**1909**
J. H. Sheehan, R. Tower, R. Maher, H. T. Porter, W. D. Taulman

Chicago Bridge & Iron Company—Chicago, Ill.—**1909**
G. E. Borst, J. W. Hoerner, E. D. Barrett, E. E. Alt, L. A. Elsener, S. C. Hamilton, G. S. Trees, F. L. Goldsby, D. A. Leach

Chicago Pump Co.—Chicago, Ill.—**1940**
G. D. Bers, M. Spiegel, J. E. Bessert, J. B. Neighbor, M. Lamb, T. H. Forrest, J. A. Tapleshay, D. Hooker, J. D. Bers, P. M. Thayer

Clark Company, H. W.—Mattoon, Ill.—**1943**

Cla-Val Co.—Alhambra, Calif.—**1950**

Clow & Sons, James B.—Chicago, Ill.—**1918**
Eddy Valve Company—Waterford, N. Y.—**1915**
Iowa Valve Company—Chicago, Ill.—**1925**
H. B. Weaver, W. Roberts, R. Ratcliffe, R. Rinehart, G. P. O'Day, H. Bower, R. Michaels, H. Skibbe, T. Wall, W. Whitney

Cochrane Corporation—Philadelphia, Pa.—**1950**

Columbia-Southern Chemical Corp.—Pittsburgh, Pa.—**1948**

Cumbustion Engineering, Inc.—Flash Dryer Division—Chicago, Ill.—**1951**

Consolidated Western Steel Division—United States Steel Corp.—San Francisco, Calif.—**1928**
J. C. McPherson, W. H. Cates

Culligan, Inc.—Northbrook, Ill.—**1943**

Darling Valve & Mfg. Co.—Williamsport, Pa.—**1919**
M. L. Hough, C. H. Simon, H. B. Foster, M. S. Evans, B. E. Engstrom, F. E. Backus, F. C. Zeis, P. Dahlin, B. F. Marcin

Davis Manufacturing Co.—Beverly Hills, Calif.—**1951**
D. G. Davis

Dayton Foundry, Inc.—Hollydale, Calif.—**1954**
E. A. Kehoe

Manufacturers Association and Their Representatives

Chicago Convention of The American Water Works Ass'n

June 12 to 17, 1955

together with year of joining the organization

DeLaval Steam Turbine Co.—Trenton, N. J.—**1917**
R. G. Baker, H. G. Bauer, C. C. Bray, H. E. Case, C. E. Coleman, C. E. Cromwell, J. Donovan, A. L. Foltz, Jr., H. M. Graham, T. L. Kyler, J. H. Metzgar, H. Neary, R. E. Roche, T. C. Stephen, J. P. Stewart, W. D. Taft, J. L. Turek

D. DeZurik Shower Company—Sartell, Minn.—**1955**

Dorr-Oliver Inc.—Stamford Conn.—**1920**
W. A. Darby, C. A. Knapp, O. V. Lindell, J. N. McKenna, G. W. Wicklund, W. E. Bach, R. S. Rankin, W. E. Budd, C. W. Crumb, C. M. Comstock, A. L. Morris, W. N. Lauer, F. G. Nelson, A. J. Fox, E. C. Cardwell, J. O. Martin

Dresser Manufacturing Division—Bradford, Pa.—**1930**

Dresser Industries, Inc.
H. P. Boncher, F. G. Fabian, H. Z. Hight, G. D. Kish, A. S. Hicks, R. J. Driggs, R. I. Davies, D. V. Hackett, J. H. Romney, J. E. Parker

Eimco Corp., The—Salt Lake City, Utah—**1943**

Electro Rust-Proofing Corp.—Newark, N. J.—**1939**
F. P. Macdonald, J. P. Knauss, R. H. McLeod, R. M. Geisinger, T. W. Walliser

Everson Manufacturing Co.—Chicago, Ill.—**1939**
R. B. Everson

Fairbanks, Morse & Co.—Chicago, Ill.—**1908**

Farnan Brass Works Co., The—Cleveland, Ohio—**1913**

Filtration Equipment Corp.—Rochester, N. Y.—**1955**
R. E. Hebert, E. W. Gray

Fischer & Porter Co.—Hatboro, Pa.—**1951**
K. Fischer, S. Blechman, R. Rice, G. Gard, R. Johnson, T. Rose, F. J. Kern, R. E. Mingle, O. Soroko, J. Haskett, E. R. Duff, W. Lauder

Fisher Research Laboratory—Palo Alto, Calif.—**1938**
E. Feichtmeir

Flexible Sales Corp.—Los Angeles, Calif.—**1938**

Fog-Tite Meter Seal Co.—Seattle, Wash—**1954**
R. D. Wans

Ford Meter Box Co., Inc., The—Wabash, Ind.—**1911**
W. E. Ford, H. N. Ford, J. L. Ford, R. V. Ford, J. H. Ford, J. L. Ford, Jr., S. W. Ford, D. J. Ford, E. Hargett, O. Goodlander

Forni, George P.—Oakland, Calif.—**1942**

Foster Engineering Co.—Union, N. J.—**1953**
V. Gentile, Jr., G. Bauer

Foxboro Co., The—Foxboro, Mass.—**1953**
J. E. Ayers, E. M. Kelly, L. D. Gregg, F. H. Leathers, R. S. Yahrmarkt, R. H. Babcock

Fraser Cement Products Co.—Los Angeles, Calif.—**1954**
A. P. Weible

General Chemical Division, Allied Chemical & Dye Corp.—Edgewater, N. J.—**1909**
R. W. Ockershausen, O. W. Svenson, J. E. Baldridge, S. J. Muller, G. A. Tyrer, F. N. Stradling

General Electric Company—Schenectady, N. Y.—**1941**

General Filter Company—Ames, Iowa—**1951**
J. P. Lawlor, M. H. Anderson, V. M. Roach, A. G. Schreiber, C. E. Lawlor, L. Porter

General Laboratory Supply Co.—Paterson, N. J.—**1952**

General Paint Corporation—Hill, Hubbell & Co. Division—Cleveland, Ohio—**1938**

Gifford-Hill-American, Inc.—Dallas, Texas—**1950**
R. A. Foley

Glamorgan Pipe & Foundry Co.—Lynchburg, Va.—**1912**
N. Hammerstrom, J. B. McVeigh, F. Grossman, G. Jewell, G. Holladay, J. Masterson

Golden-Anderson Valve Specialty Co.—Pittsburgh, Pa.—**1950**
G. A. Colton, P. B. Brauer, J. H. Kilmer, J. Lescovich

Graver Water Conditioning Co.—New York, N. Y.—**1950**
H. T. Sulcer, H. R. Fosnot, V. J. Calise, E. W. Welp, D. M. Spillane, M. Mitchell

M. Greenberg's Sons—San Francisco, Calif.—**1928**

Gruendler Crusher & Pulverizer Co.—St. Louis, Mo.—**1941**

Hagan Corporation—Chicago, Ill.—**1954**
G. G. Lipke, M. S. Gare, C. W. Work, A. L. Soderberg, T. M. Nourse

Hammond Iron Works—New York, N. Y.—**1952**

Fred W. Hanks Company, The—Cleveland, Ohio—**1926**
F. W. Hanks, Sr., F. W. Hanks, Jr., A. C. Lange, Jr., C. P. McGrath, E. J. Shandle

Harco Corporation—Rusta Restor Div.—Cleveland, O.—1940
A. R. Corlett, A. M. Van Duzer, R. H. Weisert, D. C. Lane

Hardinge Company—York, Pa.—**1944**

Hays Manufacturing Co.—Erie, Pa.—**1908**
J. D. Clemens, W. R. Johnson, I. Frazier, J. L. Presser, D. Q. Whitehair

Hersey Manufacturing Co.—South Boston, Mass.—**1908**
W. A. Hersey, W. P. Hersey, F. P. Hersey, W. B. Cambridge, D. S. Cunningham, G. H. Harrington, J. S. O'Reilly, W. B. Pebworth, M. H. Foley, W. E. Pebworth, W. O. Weight, H. J. Helberg, J. F. Fuller, G. A. Leiding, J. J. Strasser, E. F. Stahl, H. A. Brady

Hilco Supply, Inc.—South Sudbury, Mass.—**1950**
E. H. Hill

Homelite Corporation—Port Chester, N. Y.—**1936**
K. J. Clapp, R. P. Straetz, E. McClellan, R. J. Marschalk, R. C. Kennedy

Homestead Valve Mfg. Co.—Coraopolis, Pa.—**1954**
F. Schuchman, E. Johnson, K. Gorton

Hooker Electrochemical Co.—Niagara Falls, N. Y.—**1923**

Hydraulic Development Corp.—New York, N. Y.—**1928**
R. F. Hayes

Industrial Materials Co.—Philadelphia, Pa.—**1953**

(Continued on page 236)

Members of Water & Sewage Works

(Continued from page 235)

Inertol Co., Inc.—Newark, N. J.—**1944**
E. Hartmann, F. V. Kroeber, F. D'Orsie

Infilco Incorporated—Tucson, Ariz.—**1922**
P. N. Engel, J. S. Gustafson, P. F. Pew, E. M. Battey, E. A. Engelmann, R. G. Paulette, F. O. Sullivan, E. W. Butler, O. F. Barklage, D. E. Colvin, H. F. Martin, R. P. Kuykendall, R. T. Quinlan

Jeffrey Manufacturing Co., The—Columbus, Ohio—**1940**
S. L. Tolman

Johns-Manville—New York, N. Y.—**1909**
C. T. Dearborn, W. S. Hough, M. B. Roth, L. P. Lessard, H. Thomas, G. P. Harrington, W. F. Schuffler, A. L. Mathews, L. E. Simkins, R. B. Carney, J. W. Cremens, E. M. D'Argo, P. A. Harlamert, W. S. McKay, J. W. Davis, W. H. Waring, J. L. Everett, J. G. Williams, P. E. Dix, J. G. Walker, J. H. Peterson, G. D. Poole, L. M. Adamson, R. F. Orth, A. J. Maahs, L. F. Frazza, O. A. Wirsig, R. L. Brundage, W. H. Keller, D. L. Hinmon

Johnson, Inc., Edward E.—St. Paul, Minn.—**1932**
W. M. Bollenbach, D. W. Johnson, R. K. Petersen, G. F. Briggs

Jones Company, James—El Monte, Calif.—**1928**

Keasbey & Mattison Co.—Ambler, Pa.—**1939**
V. F. Stompler, J. D. Luby, D. W. Frasier, K. R. Buchelt, L. W. Gibson, S. M. Hochman, E. F. Reistroffer

Kennedy Valve Mfg. Co.—Elmira, N. Y.—**1909**
C. F. Kennedy, W. D. Wood, A. Roewade, R. Guiry, W. Nichols

Komline-Sanderson Engineering Corp.—Peapack, N. J.—**1952**
T. R. Komline, S. X. Bessen, O. A. DeCelle, J. H. Bass, J. E. Cooper, E. W. Butler, R. F. McGivern, S. E. Kappe, O. F. Barklage, E. D. Wilkes

Koppers Co., Inc.—Tar Products Div.—Pittsburgh, Pa.—**1925**
R. C. Stromquist, J. E. B. Gibbons, R. C. Kenan, J. W. Jacobson, H. E. Crane, F. O. Moreland, R. W. Mohler

Lakeside Engineering Corp.—Chicago, Ill.—**1941**

Layne & Bowler, Inc.—Memphis, Tenn.—**1939**
J. I. Seay, W. H. Reeves, J. G. Gordon, III, A. O. Putnam

Leadite Company, Inc., The—Philadelphia, Pa.—**1910**

Leopold Co., Inc., F. B.—Pittsburgh, Pa.—**1953**
F. O. Leopold, M. L. Stuppy

Limestone Products Corp. of America—Newton, N. J.—**1941**

Link-Belt Company—Chicago, Ill.—**1940**
J. J. Gilbert, E. C. Newell, R. D. Bruce, H. K. Magee, B. J. Farmer, R. F. Farris, R. W. Christy, J. E. Kosey, J. C. Vankovsky, R. G. Landers, J. W. Boyce, B. A. Davis

Lock Joint Pipe Company—East Orange, N. J.—**1916**
A. M. Hirsh, Jr., P. R. Hirsh, H. S. Howe, J. E. Longley, W. Freeman, D. Hogg, O. Clark, J. Durgom, E. A. Preston, A. W. Von Hartz, M. M. Hirsh, C. M. Albertson, F. F. Taussig, C. Gallagher, E. Eddy, R. L. Sweitzer, S. L. Bartholomew, C. Lynn, L. G. Wilhelm, G. Kuhlmann, L. H. Seton

Lone Star Steel Company—Dallas, Texas—**1952**

Ludlow Valve Mfg. Co., Inc.—Troy, N. Y.—**1908**

Lynchburg Foundry Company—Lynchburg, Va.—**1918**
C. R. Spencer, C. A. Glenn, W. R. Odor, J. C. Barksdale, F. T. Scruggs, H. D. Coffey

McWane Cast Iron Pipe Company—Birmingham, Ala.—**1923**
W. P. Cox, S. W. Harris, C. H. Allen, E. Bryan

M & H Valve & Fittings Company—Anniston, Ala.—**1935**
C. S. Martin, C. H. Hartin, H. A. Perkerson, C. P. Gabosch, W. H. McDonald, G. A. Brown, O. F. Barklage, T. Marshall Jones, E. W. Butler, C. W. Stewart, F. Early, M. D. Beckwith, W. C. Groeniger, T. R. Finley, J. W. Dousette, R. Colburn

Mine Safety Appliances Co.—Pittsburgh, Pa.—**1944**

Mississippi Lime Company—Alton, Ill.—**1952**
C. C. Schmoeller, E. H. Crum, A. A. Harney, J. B. Moranville, J. T. Van Hook

Minneapolis-Honeywell Regulator Co.—Brown Instrument Division—Philadelphia, Pa.—**1953**

Morse Boulger Destructor Co.—New York, N. Y.—**1946**

Morton Salt Company—Chicago, Ill.—**1948**
T. E. Driskell, D. M. Heath, H. A. Turner, J. M. Culp, E. Peters, Jr.

Motorola, Inc—Communications & Electronics Div.—Chicago, Ill.—**1953**

Mueller Co.—Decatur, Ill.—**1908**
W. H. Hipsher, F. H. Mueller, R. H. Morris, R. K. Levey, L. J. Evans, W. R. Augustine, D. R. Gannon, A. D. Parks, W. Bowan, J. Smith, J. L. Logsdon, C. W. Auer, W. L. DeWitt, R. L. Jolly

National Clay Pipe Mfrs. Inc.—Washington, D. C.—**1943**

National Tube Div.—U. S. Steel Corp.—Pittsburgh, Pa.—**1921**

National Water Main Cleaning Co.—New York, N. Y.—**1908**
J. A. de Camp, J. A. Frank, J. L. Hodgson, A. J. Kroog, J. L. Atwell

Neptune Meter Company—New York, N. Y.—**1909**

Niagara Alkali Company—New York, N. Y.—**1940**

Nichols Engineering & Research Corp.—New York, N. Y.—**1940**

Olin Mathieson—Baltimore, Md.—**1920**
M. E. Shoemaker, J. C. Vandertill, N. F. Wilmot

Pacific Flush Tank Company—Chicago, Ill.—**1940**
H. E. Schlenz, L. E. Langdon, C. B. Cox, E. F. Ream

Pacific States Cast Iron Pipe Co.—Provo, Utah—**1928**

Pelton Water Wheel Co., The—San Francisco, Calif.—**1935**

Permutit Company, The—New York, N. Y.—**1933**
D. J. Saunders, H. L. Beohner, S. L. Steinwender, J. S. Kneale, H. P. Sherwood, W. H. Mitchell, J. J. Dugan

Pipe Linings, Inc.—South Gate, Calif.—**1951**

Pitometer Associates, Inc., The—New York, N. Y.—**1909**
E. D. Case, E. S. Cole, C. R. Bird, H. E. Beckwith, C. J. Knoener

Pittsburgh Coke & Chemical Company—Pittsburgh, Pa.—1955

Pittsburgh-Des Moines Steel Co.—Pittsburgh, Pa.—**1914**
J. E. O'Leary, R. H. Beck, T. W. Fauntleroy, C. R. Ford, J. V. Donley, H. Miller, I. A. Bickelhaupt, F. C. Warrington, F. W. DeKlotz, H. M. Howard, M. Whitacre, E. P. DePuy

Pittsburgh Pipe Cleaner Co.—Newark, N. J.—**1946**

Pollard Co., Inc., Joseph G.—New Hyde Park, L. I., N. Y.—**1941**
B. H. Brock, R. D. Stoddard

Portland Cement Association—Chicago, Ill.—**1940**
E. P. Sellner, E. C. Wenger

Association and Their Manufacturers Representatives

Henry Pratt Company—Chicago, Ill.—**1952**
W. J. Woolley, H. C. Schwenk, R. E. Falls, R. P. Saar, J. J. O'Reilly, L. C. Von Moll

Preload Company, Inc.—New York, N. Y.—**1946**
E. H. Thwaits, J. J. Closner, A. E. Tripp, F. M. Stinton

Price Brothers Company—Dayton, Ohio—**1949**
H. S. Price, Jr., H. S. Knight, P. L. Osweiler, W. A. Gonsior, F. Hunter, Jr., R. D. Saltmarsh, R. Frame

Red Hed Manufacturing Company—Boston, Mass.—**1924**
E. P. Lufkin

Reliable Iron Foundry, Inc.—Los Angeles, Calif.—**1952**

Rich Manufacturing Company—Los Angeles, Calif.—**1935**

Roberts Filter Mfg. Company—Darby, Pa.—**1918**
C. V. Roberts, J. A. Thomas, J. W. Burton

Rockwell Manufacturing Co.—
Pittsburgh Equitable Meter Div.—Pittsburgh, Pa.—**1908**
National Meter Division—Brooklyn, N. Y.—**1909**
W. F. Rockwell, W. F. Rockwell, Jr., L. A. Dixon, L. A. Dixon, Jr., J. E. O'Grady, W. F. Weimer, C. C. Moore, T. H. Larkins, W. S. Andrews, H. Boezinger, H. Gottwald, M. J. Harper, W. H. Johnson, C. K. Madison, H. R. Strickland, T. I. Stacy, J. R. Dickerson, R. R. Bush, H. M. Logan, A. M. Dooley, R. H. Hedges, J. W. Spencer, B. Last, C. C. Shenkle, J. W. Northcutt, J. G. Hoyt, E. W. Bixby, W. R. McLaughlin, G. A. Cunningham

Ross Valve Mfg. Co., Inc.—Troy, N. Y.—**1909**
W. F. End, Sr.

Royer Foundry & Machine Co.—Kingston, Pa.—**1940**

Salomon & Bro., L. A.—New York, N. Y.—**1936**

Sherman Products, Inc.—Royal Oak, Mich.—**1954**
R. W. Humes, C. Guenther, J. Bergsma, D. Zuehlsdorff

Simplex Valve & Meter Co.—Lancaster, Pa.—**1909**
E. M. Jones, F. E. Gerlitz, Jr., A. F. Barron

Skinner Company, M. B.—South Bend, Ind.—**1942**
H. T. Waite, Jr., A. M. Boulanger

A. P. Smith Mfg. Co., The—East Orange, N. J.—**1908**
G. J. Manahan, D. S. Vetromile, T. H. Kain, L. E. Sennet, C. F. Noel, W. B. Campbell

Smith-Blair, Inc.—South San Francisco, Calif.—**1941**
T. L. Smith, L. L. Smith

Morgan Smith Company, S.—York, Pa.—**1934**
B. B. Smith, C. J. Wilcox, H. E. Shive, J. H. Whisler, C. W. Lau, M. Pease, R. A. Bramhall, M. MacDonald, J. H. Boigegrain

Southern Pipe & Casing Company—Azusa, Calif.—**1948**
D. A. Stromsoe, D. N. Chamberlain

Sparkler Mfg. Company—Mundelein, Ill.—**1955**
D. D. Baldwin

Sparling Meter Company, Inc.—New York, N. Y.—**1928**
R. W. Sparling, R. C. Sparling, A. Coburn

Stuart Corporation—Baltimore, Md.—**1937**
F. E. Stuart, Sr., F. E. Stuart, Jr.

Taylor Forge & Pipe Works—New York, N. Y.—**1949**

Thomson Meter Corp.—New York, N. Y.—**1909**

Traverse City Iron Works—Traverse City, Mich.—**1953**
W. A. Royce W. A. Royce, Jr., R. Sutton, R. Harris, R. Fitch

Trinity Valley Iron & Steel Co.—Fort Worth, Texas—**1951**
C. W. Williamson

United Concrete Pipe Corp.—Baldwin Park, Calif.—**1948**

United States Pipe & Foundry Co.—Birmingham, Ala.—**1908**
C. S. Northen, C. N. Brown, T. W. McCreery, J. L. Hart, P. K. Farrington, A. R. Hausmann, T. B. Irwin, B. G. Bretz, H. L. Nelson, J. B. McFarland

Vapor Recovery Systems Co., The—Compton, Calif.—**1941**

Vogt Manufacturing Co., Inc.—Louisville, Ky.—**1925**
J. W. Maston, J. Haly, E. L. Vogt

Wachs Co., The E. H.—Chicago, Ill.—**1954**

Walker Process Equipment Inc.—Aurora, Ill.—**1946**
J. D. Walker, J. R. Sperry, C. A. Obma, D. E. Dreier

Wallace & Tiernan Incorporated—Newark, N. J.—**1915**
F. G. Merckel, R. T. Browning, W. J. Orchard, T. T. Quigley, W. A. Hockett, R. C. Clement, J. A. Strang, C. C. Abplanalp, J. B. Kinney, J. R. Hoy, F. H. Puckhaber, K. A. Keirn, L. J. Beckman, W. L. Hafner, F. Menzenhauer, H. Zinsmeister, O. S. Porter

Warren Foundry & Pipe Corp.—New York, N. Y.—**1918**
F. R. Gruner, F. Marold, A. Santandrea, T. T. Craven

Waterous Company—Saint Paul, Minn.—**1940**
F. A. Waterous N. VanWambeke, E. Gaisbauer

Well Machinery & Supply Co., Inc.—Fort Worth, Texas—**1939**
R. L. McCann, P. Carlon, M. T. Taylor, N. W. Simcoe, W. Johnson, C. W. Stewart, C. Hum

Welsbach Corporation, The—Philadelphia, Pa.—**1953**
V. A. Hann, E. S. Boyer, W. W. Harmar, W. R. Stott, E. Garrett, C. Munz

Westinghouse Electric Corp.—East Pittsburgh, Pa.—**1942**

West Virginia Pulp & Paper Co.—New York, N. Y.—**1931**
Industrial Chemical Sales Division
J. M. Wafer, E. A. Sigworth, A. W. Cunningham, J. E. Drudy, J. F. Zieserl, D. C. Colebaugh, W. A. Welch, T. O. Oeffner, J. W. Hassler, H. F. Laughlin, J. Filicky, A. Y. Hyndshaw

Wood Company, R. D.—Philadelphia, Pa.—**1908**
T. V. Wood, W. Davies, F. C. Harmstad, T. A. Storms, W. A. West, J. D. Acker, A. F. Pleibel, F. D. Perkins, F. W. Baker, F. V. Sohle

Worthington Corporation—Harrison, N. J.—**1909**
C. K. Hood, W. R. Leopold, D. L. Gallagher

Worthington-Gamon Meter Division—
Worthington Corporation—Newark, N. J.—**1909**
R. R. Anderson, W. C. Flanders, J. C. Metzger, R. W. Ackley, W. C. Myers, W. L. Herron, R. E. Collins, W. W. Berry, F. A. Cassady, J. J. Peters, D. J. Bushnell, R. A. Saylors, E. L. Coleman, W. C. Schoeppel, W. F. Kimble, A. K. Richardson, A. J. Sunny, R. L. Miller

Yeomans Brothers Company—Melrose Park, Ill.—**1941**
D. W. Burgoon, R. C. Gloppen, S. A. Norris, R. W. Andersen, J. Ramseur

Publication Members

The American City Magazine—New York, N. Y.—**1913**

Case-Shepperd-Mann Pub. Corp.—New York, N. Y.—**1926**

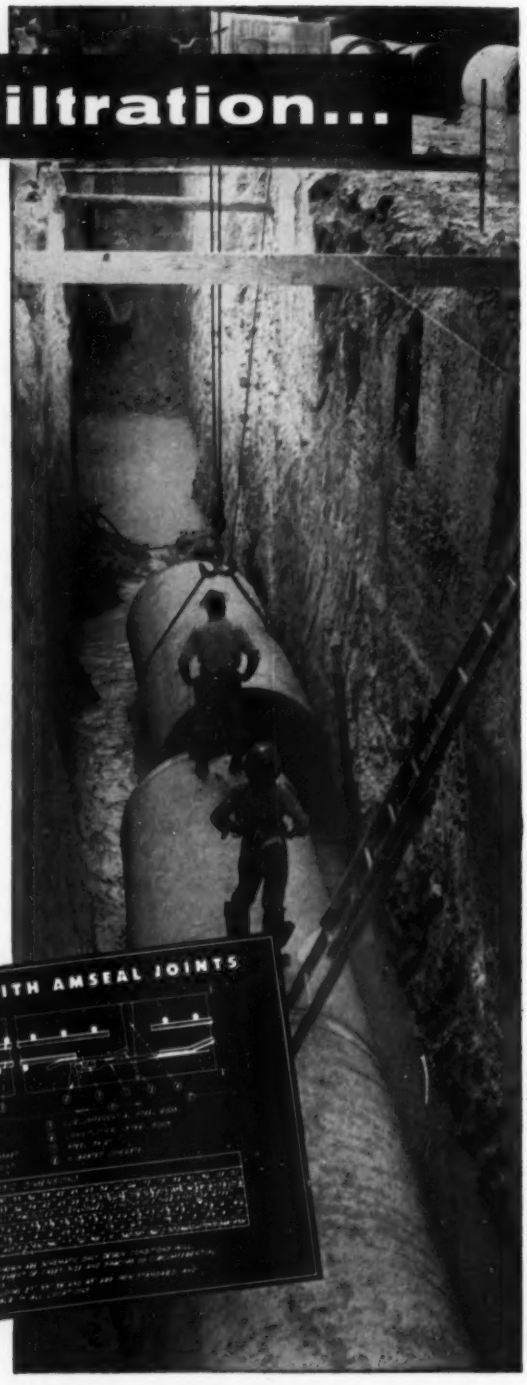
Engineering News-Record—New York, N. Y.—**1909**

Public Works Magazine—New York, N. Y.—**1921**

Water and Sewage Works—New York, N. Y.—**1928**

Western City Magazine—Los Angeles, Calif.—**1936**

STOP costly infiltration...



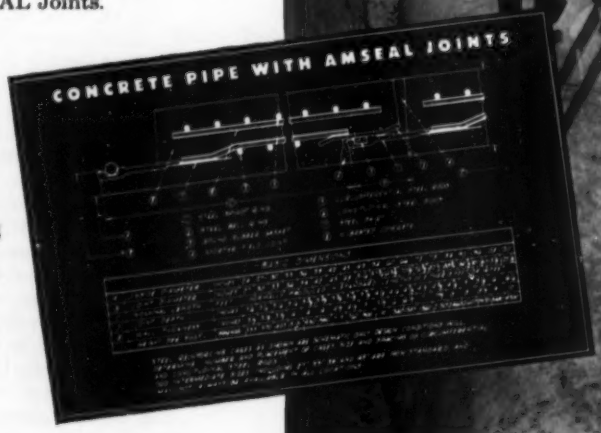
specify

AMSEAL JOINTS

Contractors appreciate the simplicity and economy of installing precast concrete pipe furnished with foolproof AMSEAL Joints—particularly where trench conditions are wet and troublesome. The continuous, round rubber gasket assures a watertight seal against infiltration or leakage. AMSEAL Joints provide the necessary flexibility to permit normal expansion, contraction, deflection and settlement without reducing their effectiveness.

The efficiency and long life of AMSEAL Joints results in *greater economy*—through savings in the construction, operation and maintenance of sewage pumping and treatment facilities. With pipe lengths of 16 feet, there is less joining—less time on the job. Inside surfaces are smooth for maximum capacity.

Write today for specifications on precast concrete pipe with trouble-free AMSEAL Joints.



This "pressure proven joint" is furnished on low pressure concrete pipe for:

- INVERTED SIPHONS
- WATER INTAKE LINES
- INTERCEPTING SEWERS
- OUTFALL SEWER LINES
- SEWAGE FORCE MAINS
- LOW PRESSURE WATER SUPPLY LINES

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION

GENERAL OFFICES
AMERICAN-MARIETTA BUILDING, 101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS PHONE: WHITEHALL 4-5600

DIVISIONS AND SUBSIDIARIES

B. C. Concrete Company, Ltd.
Concrete Conduit Company
Concrete Products Co. of America
Lamar Pipe and Tile Company
Lewistown Pipe Company
Universal Concrete Pipe Co.

Purchasing News

Information for officials interested in equipment and services for the construction, operation and maintenance of municipal utilities

New Tractor-Shovels Speed Loading Operations

Latest additions to Hough's line of "Payloader" tractor-shovels, are the Model HU and the Model HH, two 4-wheel-drive units capable of getting and retaining heaped loads faster, easier and with greater safety. The Model HU features a one cubic-yard heaped capacity, and the HH, a 1½ cubic-yard heaped capacity. Both models are designed for 40 degrees of bucket "breakout" at ground level, rather than at a 3 or 4-foot "carry" position.

To obtain maximum loads with minimum effort, the company provides for a powerful "pry-out" action by using breakout pads on the ground as a fulcrum for leverage. The opposing load forces are thus transferred to the ground through the pads during the "breakout" instead of to the axle, wheels and hydraulic system of the machine. Loads can be carried closer to the machines and at a lower level, increasing stability.

The lifting and dumping heights of these new models are higher than average, and both units are available with either gasoline or diesel power. Emphasis has been given to driver comfort with adjustable seats which have a molded foam-rubber seat and back cushions with a one-piece frame.

Full details and specifications on these new 4-wheel-drive machines may be obtained from THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 805.

New Hough loaders operate with less spillage and greater stability.

New Heil Distributor

The Johnson Trailer and Equipment Co., 5156 Houston Rd., Macon, Ga., is now a distributor of Heil hydraulic hoists and dump bodies and Heiloader elevating truck tailgates, according to W. A. Carlson, sales manager of the Heil Body and Hoist Division. Main offices of The Heil Co. are located in Milwaukee, Wis.

F-M Opens New Sales Headquarters

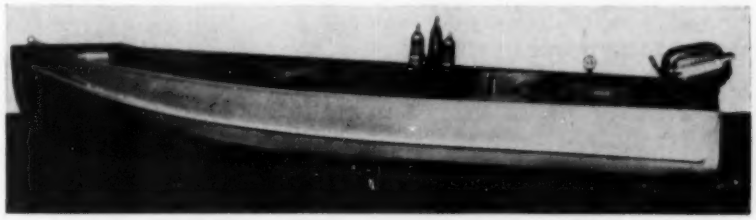
The opening of a new sales and service headquarters at Fair Lawn, N. J., is announced by Fairbanks, Morse & Co., Chicago, Ill. The new regional headquarters will serve a 7-state area, including Connecticut, New York, New Jersey, eastern Pennsylvania, Maryland, Delaware, and Virginia, providing improved service to both domestic and export customers. It replaces F-M's domestic and export sales offices formerly at 80 Broad St., New York City; the scale service shop formerly at 601 W. 26th St., New York City; and the warehouse and shipping center formerly at 401 N. Broad St., Philadelphia.

F. C. Johnson will manage F-M's domestic branch at Fairlawn, and C. W. Linschied will manage the export division. All operations are housed in a new 50,000 square-foot building on a 5½-acre plot.

Cataphote to Distribute Alcoa Sign Blanks

The Cataphote Corp., Toledo 10, Ohio, has been appointed distributor for Alcoa sign blanks, according to a recent announcement. These pre-cut aluminum blanks for making highway warning and other traffic control signs, are available in all standard sizes and shapes to meet state and Federal specifications. Made by the Aluminum Company of America, Pittsburgh, Pa., they feature an "alodized" surface that effectively resists peeling and cracking under all weather conditions.

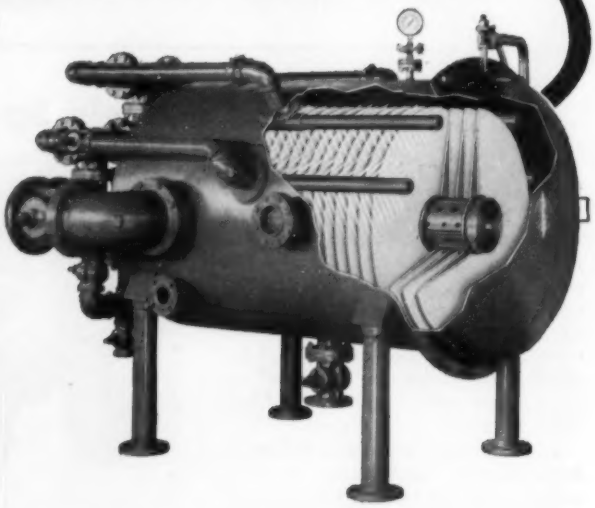
The Cataphote Corp. will furnish either the plain aluminum blanks or completely finished traffic signs with standard colors and wording.



Flood Boat for Rescue and Fire-Fighting

Purchased for the Manhattan (Kans.) Fire Department after the flood disaster of 1951, this 14-foot Lone Star aluminum boat gets dependable power from a 14-horsepower outboard motor made by Evinrude Motors, Milwaukee 16, Wisconsin.

A new trend in municipal water filtration—
The SPARKLER DIATOMITE FILTER MODEL SCJ
has been highly successful in installations now in operation



Reduced operating cost due to long filtering cycles and fast backwash cleaning, together with a remarkably low bacteria count requiring a minimum of chlorination, are features that make this new type filter worthy of the attention of all waterworks engineers.

With every backwash cleaning, the used filter cake is washed out with the residue, and a fresh pre-coat of diatomite applied to the filter plates, providing a completely new sanitary filtering media with each cleaning.

This filter removes all silica, sand, algae, organic matter, silt, etc., from the raw water, and bacteria is reduced up to 80% and even more in some cases. The high quality of water obtained will raise the standard of water produced by some municipal water systems now using old methods of filtration.

Practically any volume of city water can be filtered economically in the Sparkler SCJ filter. Single units capable of handling 5,000,000 gallons of water a day are available. Multiple units can be engineered into a system for larger requirements.

Less than 0.2% of water is required to backwash and clean the largest filter units and a complete fresh precoat of diatomite can be applied and the filter ready to resume operation in 15 minutes.

Operators can be easily trained, no highly skilled specialized personnel is required to insure efficient performance.

Write for plans and prices on your requirements. Address Dan Baldwin for personal service.

SPARKLER MANUFACTURING CO.
Home office and plant, Mundelein, Ill.
SPARKLER INTERNATIONAL, LTD.
Plants at Galt, Ontario, Canada — Amsterdam, Holland
Manufacturers of industrial filters for over a quarter of a century.

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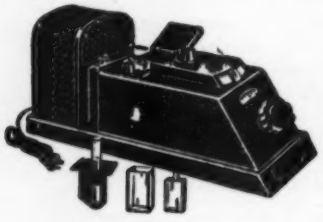
KLETT SUMMERSON ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

Cleans Septic Tanks and Cesspools

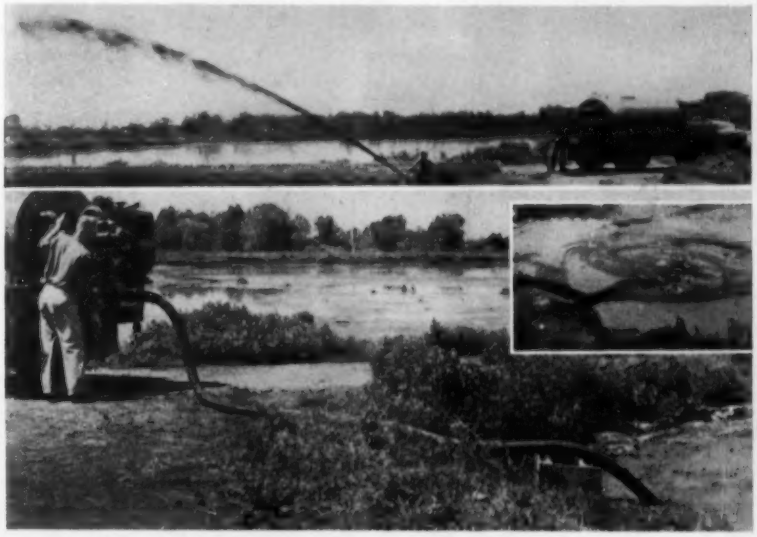
Suburban communities can simplify their sanitation problems with the new O.S.C., an odorless sanitary cleaner designed especially for septic tank service. The cleaner consists of an integral pump and tank apparatus, easily mounted on a standard truck chassis 158 to 161 inches. In addition to cleaning septic tanks, it does a fast, efficient job on cesspools and outside toilets.

The pump of the O.S.C. is a Gorman-Rupp self-priming, centrifugal model with a removable end plate, two vane trash-type impellers for handling solids two inches in diameter, and a renewable wear-plate. It is powered by a Wisconsin VE-4D air-cooled, 21-hp engine, with electric starter.

The tank, with a 1,100-gallon capacity, is furnished with a sand drainage sump, manhole cover and safety control, limiting fills to 1,000 gallons. Lever-controlled lubricated plug valves regulate flow within the piping, pump and tank.

Pump connections and piping are designed for both pumping and jetting through a single 3-inch hose or separate hoses, 3-inch suction, 2-inch discharge. Pumping capacity ranges up to 500 gallons at 39 pounds.

Additional data on the new O.S.C. is available from the GORMAN-RUPP CO., MANSFIELD, OHIO. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 804.



A new odorless sanitary cleaner unit at work in a city sewage disposal facility. By alternate pumping and jetting through a single hose, heavy solids in one of the large filtration beds are reduced to a mixture that is easily pumped away.

New International Distributor

The Export Division of the Armstrong Cork Co., is scheduled to distribute Grotelite SS Reflex Reflective Sheeting in the export market, according to a recent announcement by Walter Grote, president of the Grote Mfg. Co., Inc., Bellevue, Ky. Armstrong's Export Division has some 200 distributors and sales representatives in nearly 100 countries throughout the world. It is headed by F. M. Ritts, general manager, and operates from Armstrong headquarters in Lancaster, Pa.

Small, Rubber-Tired Ditcher

Rotating paddles and plows on Barber-Greene's Model 702 ditcher place the spoil neatly at the edges of the trench, facilitating backfilling operations.

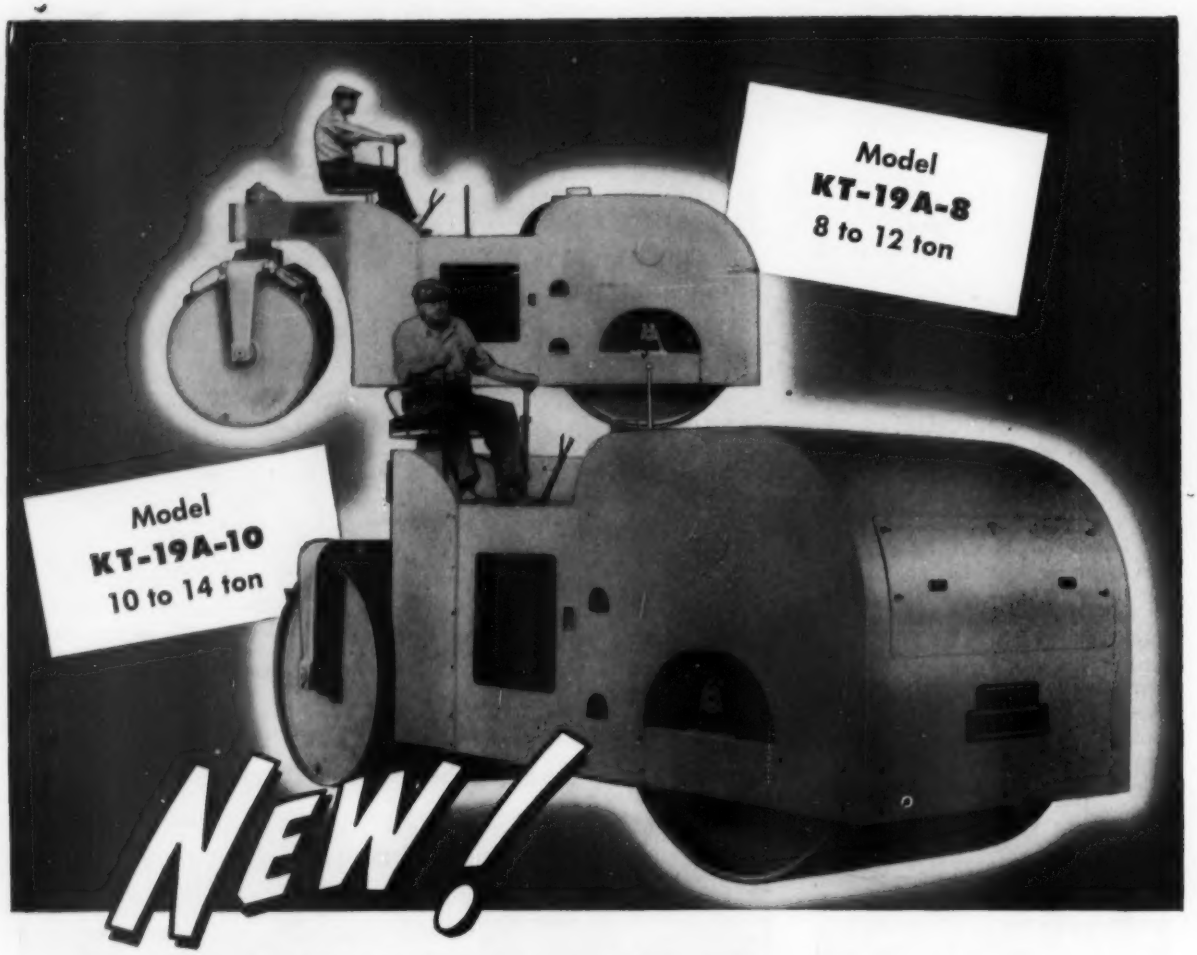
Supplement your city's fleet of large ditchers with a small, rubber-tired model introduced by the BARBER-GREENE CO., AURORA, ILL. The Model 702 ditcher will dig trenches for house services as well as for different types of underground cable. It is an ideal unit for installing lawn sprinkler systems and speaker leads for airport lighting systems.

Two digging booms are available with the new ditcher. One digs 30 inches deep and can be equipped with either a 2¼- or 4½-inch bucket line. The other, digging 40 inches deep, is furnished with either 2½- or 5-inch lines. One man can switch from one digging width to another in minutes.

The angled construction of the Model 702's boom lets the operator dig under sidewalks and right up to house foundations, minimizing the amount of hand work on the trench. A "Varidraulic" drive, providing a wide range of speeds from zero to 40 feet per minute, controls the machine's crowding speeds during digging. The digging boom is raised out of the trench by a mechanical lift in seconds.

The new ditcher is less than 36 inches wide and weighs under 2,000 pounds. It is easily hauled in the bed of a light truck, or may be attached to a standard towing hitch.

Get full details on the Model 702 directly from the manufacturer, or you may use the Post Card located for your convenience on the insert following Page 282. Circle No. 802.



BUFFALO-Springfield announces line of STANDARD TANDEM ROLLERS

These new STANDARD Tandem Rollers are designed especially for low-cost handling of any compaction job where pressures of from 8 to 14 tons are required.

Included as standard equipment is a heavy-duty, single-stage torque converter* that automatically matches power and speed to the material and grade variations of the job.

Without gear shifting, drivers can operate these rollers at any selected speed from 1 to 5 mph with the engine running continuously at its most efficient and economical power peak (2-speed mechanical transmission also available as optional equipment).

The heavy-duty, industrial-type engine (diesel or gasoline optional) delivers dependable power under all kinds of operating conditions. Buffalo-Springfield's widely-known bevel gear and final drive assembly offers the advantages of unusually low gear tooth bearing pressures, results in less wear, and is easy to adjust when required.

The massive, all-welded frame is heavily reinforced to maintain rigidity over a long operating life. Control instruments and levers are conveniently located to simplify the operator's job.

Ask your nearest Buffalo-Springfield distributor to tell you all about the new STANDARD Tandems. Dollar-for-dollar, feature-for-feature, they can't be matched by any other rolling equipment available today. Write for the new illustrated Bulletin No. S-68-555.

**Buffalo-Springfield has offered torque converter power since 1951.*

BUFFALO ROLLER COMPANY — **SPRINGFIELD** SPRINGFIELD, OHIO, U. S. A.

THE LEADER IN COMPACTION EQUIPMENT DESIGN AND MANUFACTURE

Purchasing News

New Vice-Presidents for Dresser Industries

Newly-appointed Dresser officials include (left to right): H. P. Boncher and W. D. Miller, operating vice-presidents of Dresser Industries Inc., and F. G. Fabian, Jr., general manager of the Dresser Manufacturing Division.

H. P. Boncher and W. D. Miller have been appointed operating vice-presidents of Dresser Industries, Inc., Atlantic Bldg., Dallas 1, Texas, according to H. N. Mallon, president. Mr. Boncher is the former general manager of the Dresser Mfg. Division, and a vice-president of Dresser Industries, Inc. Mr. Miller joins the company after 10 years with the Creole Petroleum Corporation in Venezuela.

As new operating vice-president, Mr. Boncher will work with such Dresser companies as the Dresser Mfg. Division, Bradford, Pa.; Bovaird & Seyfang, Bradford, Pa.; Clark Bros. Co., Olean, N. Y.; Dresser-Ideco Co., Columbus, Ohio; Pacific Pumps, Inc., Huntington Park,

(*Continued on page* 245)

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Single Unit Mixes, Heats and Makes Hot Patches

NO MANUAL HANDLING From Charging Hopper To Discharge Chute

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With no interruption of traffic.

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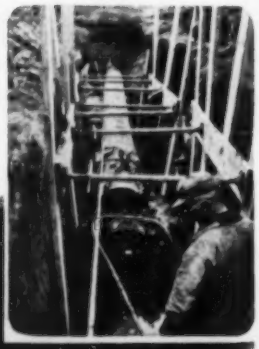
UNDER streets—
highways—
alleys—
sidewalks—
lawns—
railroad beds, etc.

FOR—locating gas leaks—anchoring telephone, telegraph and power poles—elevator shafts—pre-boring for piling, drainage installations, foundations



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This amazing machine discharges newly-developed insecticides as well as the older types in a true, clean fog which spreads quickly and permeates the deepest crevices. This ability means a better insect control program for your community. Put Tifa to work for you!

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TODD SHIPYARDS CORPORATION

Headquarters:
Columbia & Halleck Streets, Brooklyn 31, N. Y.

Plant:
Green's Bayou, Houston 15, Texas

(*Continued from page* 243)

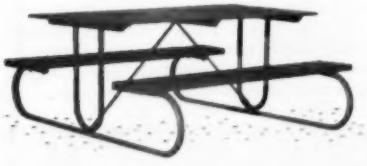
Calif.; and the Roots-Connersville Blower Division, Connersville, Ind. Mr. Miller will have similar operating responsibilities for the Magnet Cove Barium Corp., Houston, Texas; Lane-Wells Co., Los Angeles, Calif.; Security Engineering Division, Dallas, Texas; and the Ideco Division, Dallas, Texas.

Succeeding Mr. Boncher as general manager of the Dresser Mfg. Division, is F. G. Fabian, Jr., former assistant general manager.

Sturdy Picnic Tables for City Parks

An increasing number of municipalities are specifying these lightweight picnic tables for use in public parks and recreation areas. The tables are made of 1-inch and 1¼-inch steel pipe painted green, and California Redwood in natural finish. They are designed to withstand years of outdoor use, regardless of weather conditions.

Instead of buying the completed table, many municipalities get the steel frame alone, and supply their own wood. Others prefer the tables already furnished



with wood tops and benches. These table tops are 36 inches wide and 6, 8 or 10 feet long. The steel frame is constructed without bars, rails or braces, for complete freedom when entering or leaving the table.

Further information on these modern park tables is available from the WICHITA SUPPLY AND MFG. CO., 1050 S. MCCOMAS, WICHITA, KANS. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 807.

De Laval Plans Extensive Expansion Program

A long-range expansion program is announced by J. P. Stewart, president of the De Laval Steam Turbine Co., 866 Nottingham Way, Trenton, N. J. Under this program, land has been purchased for the future construction of buildings in Trenton and in Houston, Texas. In addition, building plans are already under way on land sites acquired near Chicago and San Francisco.

Specific expansion plans outlined by Mr. Stewart involve 16.6 acres recently purchased adjacent to the existing De Laval plants in Trenton. Part of this area is already occupied by a building for the manufacture of high-pressure turbochargers for diesel and gas engines. Another new building has been planned for erection in Forrest Park, a rapidly growing industrial community near Chicago.

In Millbrae, Calif., near San Francisco, 2.6 acres have been purchased for a new plant which is now under construction. It will house the sales and service facilities of the De Laval Turbine Pacific Co., a subsidiary of De Laval Steam Turbine, and the De Laval Separator Co. In Houston, Texas, three acres have been purchased to accommodate, eventually, a new building planned for the sale and service of De Laval products in the Southwest region.

SERVE FOR YEARS! NO MAINTENANCE!
DAY AND NIGHT on Borrowed Light!

IDENTIFICATION SIGNS THAT SAVE AND SERVE!

★ GUARANTEED NO-RUST!
★ WEATHERPROOF!
★ CLEARLY SEEN DAY AND NIGHT!
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Lifetime Aluminum Day and Night Street Signs

LAKE SHORE MARKERS 654

Write for Free Catalog!

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P. O. BOX 59 ERIE 1, PA.
CABLE ADDRESS: LASHMAR
Factory: 654 W. 19th St., Erie, Pa.

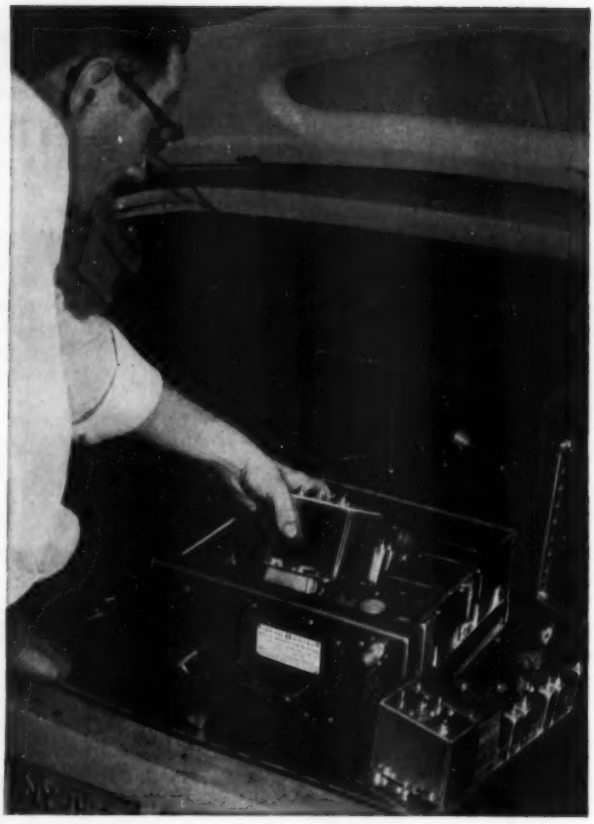
G.E. DEVELOPS NEW PLUG-IN CHASSIS FOR 2-WAY RADIO

NEW PROGRESS LINE saves money on maintenance through faster servicing—protects from obsolescence because chassis are quickly interchangeable.

IN the new Progress Line, transmitter, receiver, power supply and optional chassis are individually rack-mounted in a triple-rigid mobile case. Rapid interchangeability is provided by this rack construction and true plug-in chassis. This plug-in design permits changes in frequency, power, type of reception (narrow or wide band) quickly *at minimum cost, at any time.* You're free of any obsolescence risk!

You may switch Progress Line mobile units—whether front or trunk mount, between vehicles with 6 or 12 volt DC systems. No electrical alterations are needed. And any mobile combination can be converted quickly to a low-cost, 117 volt AC intermittent duty base station by changing only the power supply chassis!

Let a G-E Communications Counselor analyze your radio needs and develop an installation or conversion program planned for long-run savings. Write or call today for full specifications on the new PROGRESS LINE. *General Electric Company, Communication Equipment, Section X1065, Electronics Park, Syracuse, N. Y.*



INDIVIDUAL PLUG-IN CHASSIS minimize capital investment in spares and reduce radio maintenance time! Your vehicles will be back "in service" faster. For instance, you can replace either a transmitter or receiver plug-in chassis right in the vehicle in 5 minutes—using only a screwdriver. Individual plug-in chassis of the new General Electric Progress Line units also provide complete interchangeability between mobile and station transmitters and receivers.

◀ There is a G-E Authorized Service Station near you. Look for this sign.

EASY FRONT MOUNTING under the dash. The new G-E Progress Line case is less than 15" deep. For the first time you can have a 90-watt front mount mobile unit in the 25-54 MC band and a 50-watt front mount mobile unit in the 144-174 MC band. In the 25-54 MC band you can now have simultaneous monitoring of 2 channels, in the same case, without additional equipment.

Progress Is Our Most Important Product

GENERAL ELECTRIC

New Tractor-Mounted Street Sweeper

M-B street sweeper mounted on an Oliver Super 55 tractor.

Designed especially for the Oliver Super 55 tractor, the new M-B street sweeper is easily mounted and removed and will sweep city streets quickly and economically. The unit features a standard broom, 72 inches long and 32 inches in diameter. This broom can be turned "end for end" for even wear, and broom ground pressure is adjustable and spring-loaded to avoid shocks and bumps.

The hood of the new M-B unit is quickly removed for fast, easy snow sweeping. Raising and lowering the broom is easy, too, with finger-tip control and utilizing the tractor hydraulic system.

M-B sweepers are also made for most wheel tractors and for the Willys Jeep. For full details, write THE M-B CORP., NEW HOLSTEIN, WIS., or you may use the Post Card on the insert following Page 282. Circle No. 814.

CLT

Tax Equalization Appraisals

Fifteen years of unduplicated experience of producing highest quality appraisals for tax equalization purposes.

Client list and brochure upon request.

COLE-LAYER-TRUMBLE COMPANY

11 West Monument Ave. • Dayton 2, Ohio

PROVABLE APPRAISALS SINCE 1938

DISTRICT OFFICES:

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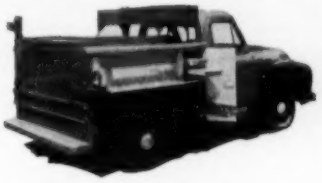
415 Congress Street, Portland, Maine
84 Peachtree Street, N.W., Atlanta, Georgia

Pierce
QUALITY BRAND
UTILITY BODIES

"SM" SERIES—74"-104" long by 74"-88" wide. Completely equipped with tool and parts storage space for efficient operation.



"CMS" SERIES—74"-104" long by 74"x88" wide. Transverse compartment through front of body carries meters, parts and tools. Rolling drawers with removable dividers.

"TT" SERIES—Transformer Trailer—one design of many for installing or restoring service. Simplifies change-outs with fast service, anywhere.

Also complete line of Line Construction, Gas, Ladder, Aerial Tower Bodies, Trailers and Pick-up Side Boxes.

Write for Complete Information

Company .....
Name .....
Address .....
City ..... State .....
I am interested in
Service Bodies ☐ Trailers ☐
Pick-up Boxes ☐ Line Bodies ☐
for ½ ton ☐ ¾ ton ☐ 1 ton ☐ 1½ ton Chassis ☐

AUTO BODY WORKS, Inc.
APPLETON, WISCONSIN

Etnyre cleans streets in Bettendorf, Iowa cheaper, faster, more efficiently!

Regardless of the size of the city, Etnyre Street Flushers handle sanitation problems efficiently.

In Bettendorf, Iowa, for example, a high level of public satisfaction is reported by G. C. Scott, Sr., Street Commissioner, after a year's experience with a new Etnyre. According to Mr. Scott, the present method costs less, requires less time, and results in a better job. Particularly well liked is the one-man cab control.

With the new Flusher, streets up to 42′ wide can be cleansed in one trip. Knife-edged, high pressure streams of water send all dust and debris to the sewer. Flushing continues irrespective of parked cars. Faster operation permits more frequent cleaning. And the city ends up with clean, sanitary, cool streets in which taxpayers take pride.

When the Flusher is not operating on Bettendorf's streets, it is put to work cleaning sewers, fighting fires, and sprinkling dusty surfaces.

Once you see an Etnyre in action, you'll never be content until you get all its advantages for *your* city. Investigate now — see how little an Etnyre costs to own and operate — get latest data and prices from your nearby Etnyre dealer, or write us.

SEE YOUR ETNYRE DEALER!

ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

E. D. ETNYRE & CO., Oregon, Ill.

Combines Hot Process and Zeolite Softeners

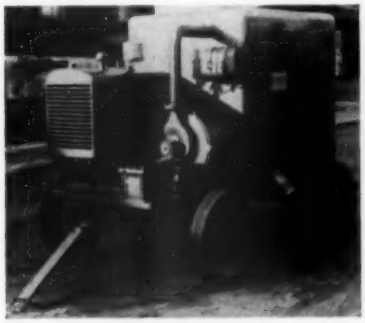
Pure water for boiler feed and process use may be obtained economically with a Cochrane Hot-Process, Hot-Zeolite Water Conditioner. This effective 2-stage system, combining a hot-process softener with a hot-zeolite softener, is the result of recent developments in ion exchange resins which permit the operation of zeolite softeners at temperatures up to 250° F. It effectively lowers the silica content of treated water, and reduces alkalinity of the effluent to about half the value attained by hot process softeners.

According to the manufacturer, the Hot-Process, Hot-Zeolite combination requires a lower capital investment than a comparable 2-stage Hot Lime-Soda, Hot-Phosphate Softener. Chemical costs are lower, too, since the new softener uses salt for regeneration rather than the more expensive soda ash, and substantially reduces supplementary phosphates. The softening operation is simple and reliable and compensates for any variation of hardness in the influent water.

Publication 4801 describes the new water conditioner in detail. For your copy, write the COCHRANE CORP., PHILADELPHIA 32, PA., or you may use the Post Card on the insert following Page 282. Circle No. 799.

Drilling Simplified with New Dust Control Unit

Mount this improved Kadco dust control unit on any large-type tractor, air compressor, or drill rig combination. Used with either four jack hammers or two wagon drills, the machine effectively



prevents Silicosis in any rock drilling or quarry operation. By continuously withdrawing rock dust and chips, it prevents this material from accumulating at the cutting edge, provides greater drilling footage, and permits the bit to cut virgin rock at all times without having to regrind and pulverize the accumulated cuttings.

Another advantage of the Kadco dust collector is that it holds "down-time" to a minimum. Bit sharpening and bit changes are less frequent, and there is no lost time for "blow-back" and no steel seizure from cutting build-ups. More important, the drill runner is always safe from free-flying dust.

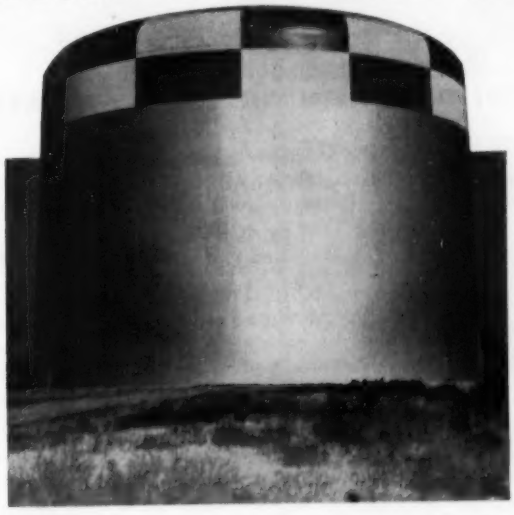
The new machine is easily cleaned. An external shaker handle permits the quick removal of dust from the filter bag without opening the unit. To unload the accumulated chips and dust, three gravity flow side dump openings are used, each dump leading from a large, hopper-type bin within the machine.

Full information on Kadco dust control units with either gas, diesel or electric motor drive, is available from the COMPLETE MACHINERY & EQUIPMENT CO., INC., 36-40 11TH ST., LONG ISLAND CITY, N. Y. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 801.

Specify "ROSS" Automatic Valves

FOLLOW THE LEAD OF THE ENGINEERS WHO SPECIFIED CONTROLS FOR THIS STANDPIPE FOR THE "SOUTH PITTSBURGH WATER CO." PITTSBURGH, PA.

WATER LEVEL IN THIS, "AMERICA'S LARGEST STANDPIPE," IS CONTROLLED BY A 20-INCH ROSS DOUBLE-ACTING ALTITUDE VALVE.



Pioneers in the manufacture of automatic hydraulic control valves, Ross has served the industry since 1879.

Valves manufactured include:

ALTITUDE—BACK PRESSURE—FLOAT
PRESSURE REDUCING—SURGE RELIEF—COMBINATION
with Hydraulic and Electric Pilot Controls

Ross Valve Manufacturing Co., Inc.
8 OAKWOOD AVE. TROY, N. Y.

meet the *Recreational* needs of all *Age Groups*

WITH A

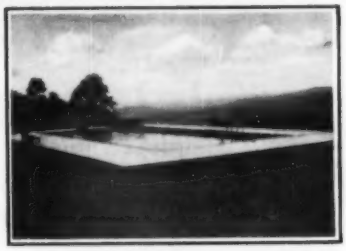
Koven *all steel* Swimming Pool

THE POOL WITH THE LOWEST MAINTENANCE

Progressive municipalities are effectively meeting the challenge of today's accent on recreation by installing a KOVEN ALL STEEL SWIMMING POOL . . . for a swimming pool is the only facility enjoyed by *all* age groups. And when you select an *all steel* swimming pool by KOVEN, you are selecting the most economical, long-lasting pool made — one that will provide trouble-free operation for years to come.

Leak-proof KOVEN pools are constructed of heavy welded steel for extra durability and practicality. They are completely free from the weaknesses common to other types of pools — remain in perfect condition even after severe winters. Best of all, KOVEN pools require no maintenance except an occasional coat of paint!

With over 70 years' steel fabricating experience, KOVEN can help determine the best size and design for your community — and assures full responsibility for all construction details. Call or write today for a free, colorfully illustrated booklet or a KOVEN representative. No obligation.



- THE ONLY LEAK-PROOF TYPE BUILT
- INDOOR AND OUTDOOR MODELS
- 10 YEAR GUARANTEE ON ALL POOLS

PAINT GUARANTEED FOR TWO FULL SEASONS

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KOVEN STEEL SWIMMING POOLS, INC.
a division of L. O. Koven & Bro., Inc.
154-A OGDEN AVE., JERSEY CITY 7, N. J.

New Type "End Section" for Metal Pipe

Municipalities can reduce both material and installation costs for corrugated metal structures with a new type "end section" developed by ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

The new design incorporates two side lugs and a length of galvanized rod threaded on each end. It is an alternate type of connection for use in 30- and 36-inch diameter pipe, and pipe arches from 18 to 11 inches to 58 x 36 inches, inclusive. On pipe from 12 to 24 inches, the full circumferential rod and lug are used. On 42- and 48-inch diameter pipe, end sections are fabricated with a riveted-on connector section and joined to the culvert barrel with a standard band coupler.

Detailed information on the new "end section" is available directly from the manufacturer, or you may use the Post Card on the insert following Page 282. Circle No. 788.

New "end section" consists of two side lugs and a length of galvanized rod threaded on each end.

Morse Boulger Moves

The new general offices of the Morse Boulger Destructor Co. and its divisions the Kernerator Co., Kerner Incinerator Division, and Robinson Air-Activated Conveyor Systems, are located at 80 Fifth Ave., New York 11, N. Y.

LEADITE

The Pioneer Self Caulking Material for C.I. Pipe

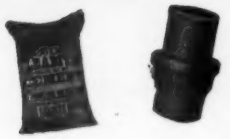


TABLE OF COMPARATIVE QUANTITIES

Nominal inside dia. of pipe, in.	Depth of joint, inches of Leadite	Approx. lbs. of Leadite per joint	Depth of joint, inches of lead	Approx. lbs. of lead per joint
4	2.5	2.00	2.25	8.56
6	2.5	3.00	2.25	11.71
8	2.5	4.00	2.25	14.63
10	2.5	5.00	2.25	17.70
12	2.5	6.00	2.25	20.86
14	2.5	7.00	2.25	24.02
16	2.5	8.25	2.25	33.07
18	2.5	9.25	2.25	36.88
20	2.5	10.50	2.25	40.71
24	2.5	13.00	2.50	53.02
30	2.75	16.00	2.50	65.36
36	2.75	19.00	2.50	77.96
48	3.50	30.00	3.00	121.15
54	4.0	38.00	3.00	135.60
60	4.0	42.00	3.00	150.70

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking

Opportunity for Civil Engineers

City of Kenosha, Wisconsin is accepting applications for Engineers — both permanent and temporary. Salary range from $4200 to $6600 depending on experience.

Social Security, State retirement plan, Blue Cross, Blue Shield, 40-hour week.

Opportunity for diversified experience in street paving, storm sewers, sanitary sewers, water supply.

Apply City Manager, City Hall, Kenosha, Wisconsin.

FISHER
M-SCOPE

"ELECTRONIC WITCH"
PIPE-CABLE-FINDER
—LEAK-DETECTOR—

USED AS A PIPE FINDER

USED AS A LEAK DETECTOR

- Fiberglas Cases
- 50% Lower Batt. Cons.
- Unsurpassed Performance
- Built-in "A" and "B" Battery Checker in Transmitter and Receiver $12.50 Extra.

PRICE ONLY $162.50

- IMMEDIATE SHIPMENT
- WRITE TODAY FOR THE COMPLETE "ELECTRONIC WITCH" STORY.

FISHER RESEARCH LABORATORY, INC.
PALO ALTO / CALIF.

IT'S AN asplundh CHIPPER

"CHIPPER" says, "Constant research for improvements in brush disposal equipment is one of our prime responsibilities."

WE WERE FIRST . . .

- To provide simplified operation—one moving part, the rotor.
- To engineer a practical chipping unit.
- To develop a flywheel, tapered blades, and a custom built tool container, to name a few.

AND NOW FIRST . . . AGAIN

to further simplify the chipper by the use of a solid floor. Request a demonstration and compare!

For further information and a leaflet showing the dealer nearest you, please mail the coupon today.

ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa.

Send me literature on ASPLUNDH CHIPPERS.

Name .....

Company .....

Address .....

New Microfilmer

The annual savings from microfilming, reports John K. Boeing, president of Recordak Corp., a subsidiary of the Eastman Kodak Co., amounts to three or four times the installation cost and annual operating expense. While protection of records was originally the basic purpose of microfilming, today it is also the saving in hours and overhead by eliminating much paper work.

A new desk-top microfilmer, with interchangeable lenses which produce three different photographic reductions, does the work of three machines. The highest reduces a large ledger sheet forty times, producing an image on 16mm film a fraction the size of a postage stamp.

Detailed information on this new microfilmer which, according to Mr. Boeing, will bring a new low cost in microfilming, is available from the RECORDAK CORP., 444 MADISON AVE., NEW YORK 22, N. Y. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 817.

Cuts All Types of Metals

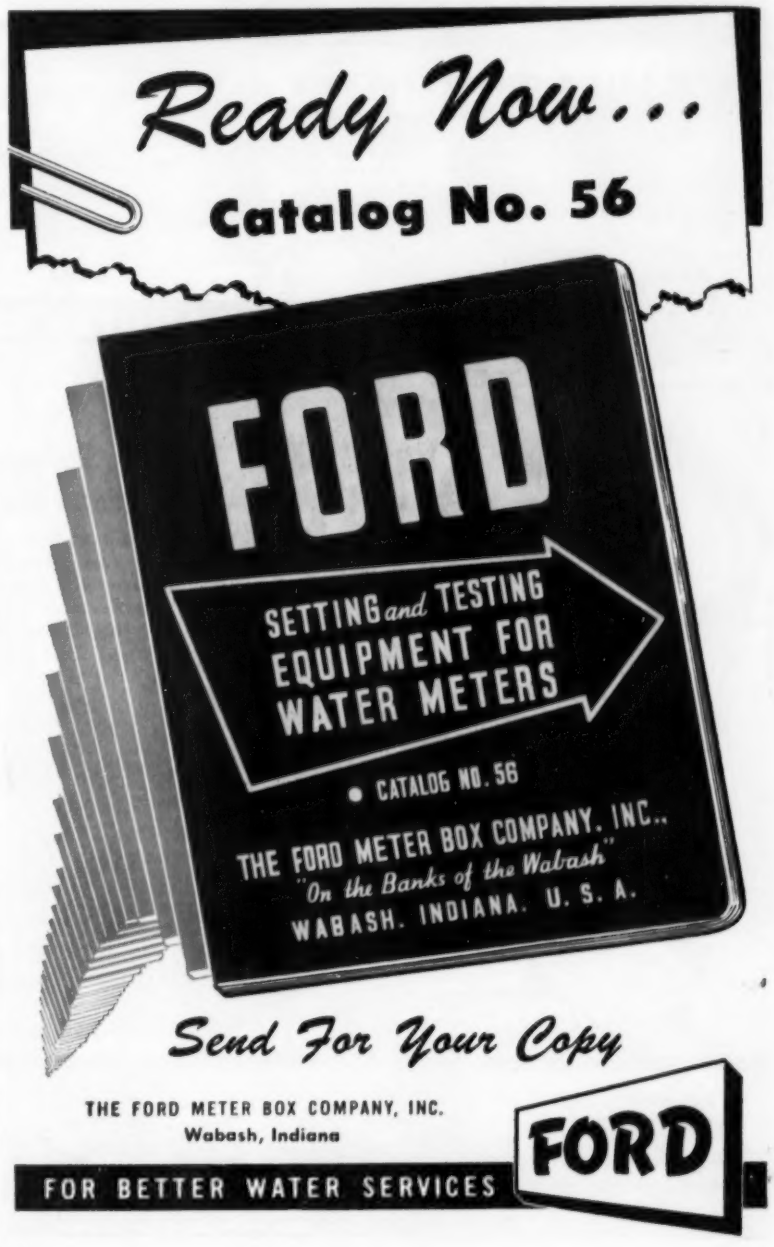
New Model 20 "Speed-Cut" uses either an 18- or a 20-inch cutting wheel.

One man operating a Beaver "Speed-Cut" abrasive cut-off machine can do all the cutting necessary for an installation crew of 40 to 80 men, according to BEAVER PIPE TOOLS, INC., WARREN, OHIO. A high-speed abrasive wheel cuts through soft or hard metals easily, leaving a smooth surface that seldom needs reworking. The machine will work with thin-walled steel aircraft tubing, soil pipe, galvanized steel, angles, structural members or solid bars, doing an efficient cutting job in seconds.

A No. 20 "Speed-Cut" machine with a 20-inch cutting wheel and a wheel speed of 2,300 rpm, can sever a 6-inch pipe or a 2½-inch solid bar or rod. This model incorporates a foot-controlled chain vise to hold the material. The No. 14 machine has a hand-operated chain vise, a 14-inch wheel, and a wheel speed of 3,000 rpm, and will cut 4-inch pipe or 2-inch solid rod or bar.

Both the No. 14 and No. 20 Beaver "Speed-Cut" abrasive cutting machines have permanently sealed, double-row ball bearings, assuring easier operation and longer life.

For additional information on either model, write directly to Beaver Pipe Tools, Inc., or you may use the Post Card on the insert following Page 282. Circle No. 800.



2 CHAMPIONS for BETTER ROAD WORK...

Baughman ICE CONTROL EQUIPMENT

K4SC SALT & CINDER SPREADER

Two-speed transmission for thick or thin applications of cinders, sand, salt, chloride, chat or gravel; oil-sealed clutch for spot-spreading, as at intersections, safety zones, etc.; patented safety baffles for accurate control of spread from 8 to 40 ft. widths. Two models: Power Take-Off (above) and Auxiliary Engine Drive. Write for Bulletin A-398.

IMPROVED HYDRAULIC SPREADMOBILE

Exclusive *"Center-Spred"* design spreads in front of all four wheels. All operations *hydraulically operated* from cab. Other "extras": *Exhaust Heater,* to prevent load-freezing; *Split Bottom Dump* for off-season hauling, dumping. Write for Bulletin A-370H.

BAUGHMAN

BAUGHMAN MANUFACTURING COMPANY

150 Shipman Rd., Jerseyville, Ill.

The BLAW-KNOX "Complete Package" of UNIVERSAL STREET FORMS makes curb and gutter work a more profitable part of your business

One set of Blaw-Knox Steel Universal Street Forms handles *every* curb, gutter and sidewalk job faster *and at lower cost!* They're standardized for interchangeability . . . the only *completely standardized* steel form system available. Use them in interchangeable combinations to fit a wide variety of jobs . . . use them over and over. There's practically no maintenance. Your Blaw-Knox distributor can explain additional savings, show you how to make more profit with a "Complete Package" of forms. Call him today!

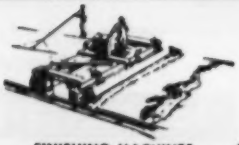
Ask your Blaw-Knox distributor about the "Complete Package" of concrete paving and ready-mix equipment.

BLAW-KNOX

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
Pittsburgh 38, Pa.
Offices in Principal Cities

Ask about the
BLAW-KNOX
"Complete Package"
of CONCRETE PAVING
and
READY-MIX EQUIPMENT

CONCRETE SPREADER-VIBRATORS


FINISHING MACHINES

AGGREGATE BATCHING PLANTS

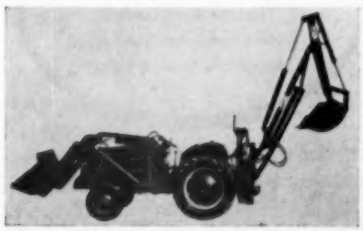
HI-BOY TRUKMIXERS

New Waste Receptacle for Indoor Use

Place these waste receptacles in the corridors, entry-ways and waiting rooms of hospitals, schools and other public buildings, and near drinking fountains and vending machines for used paper cups and wrappings. The unit is designed with a dome top of stainless steel which swings freely inside the outer shell in any direction. Thus, it is possible to place the receptacle against a wall or in a corner when space is limited. Waste disposal, simple from any point of approach, becomes faster and more efficient, too.

Detailed information on this new Solar "Jet" model and the "200" series of self-closing waste receptacles, may be obtained from the SOLAR-STURGES MFG. CO., DIVISION OF U. S. INDUSTRIES, INC., MELROSE PARK, ILL. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 791.

New Backhoe and Shovel for I-H Tractor

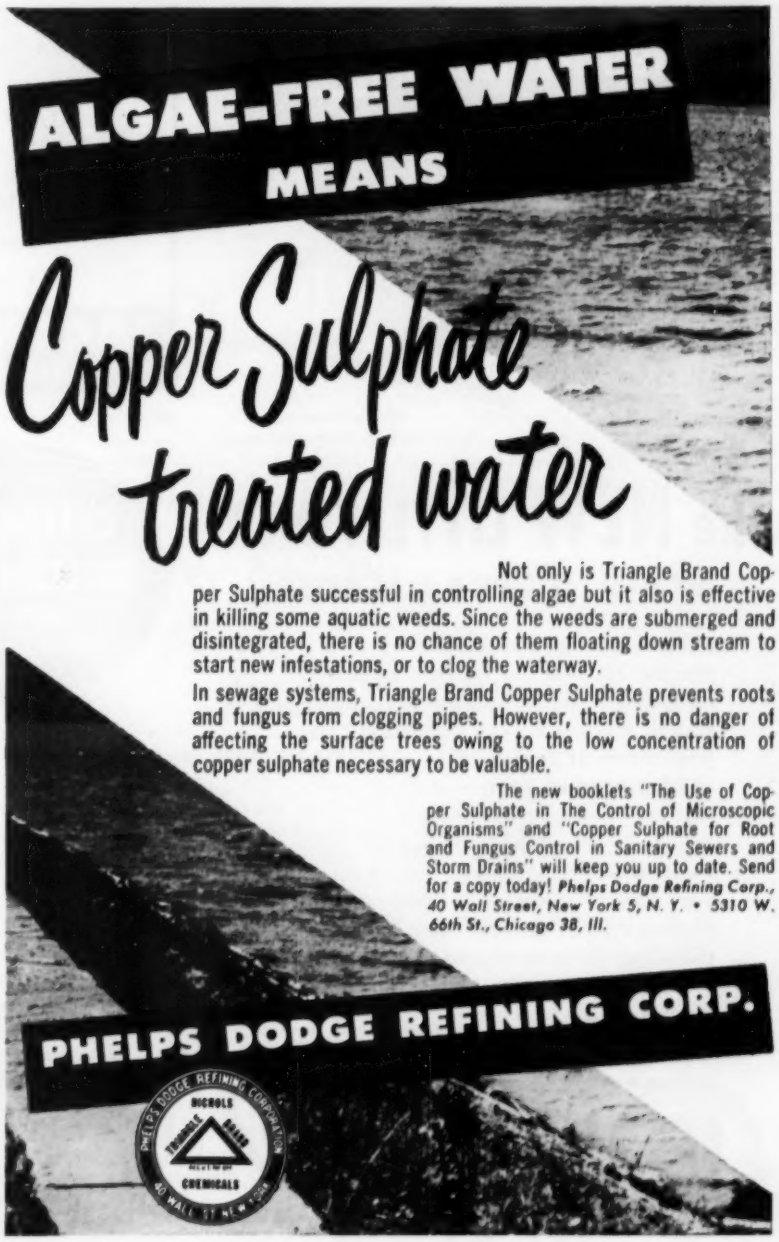


Model C-10 backhoe and Model TS-7 tractor-shovel attached to an International Harvester Model 300 tractor.

The new Henry hydraulic backhoe, Model C-10, and the Henry hydraulic tractor-shovel, Model TS-7, were recently approved by the International Harvester Co. for use on its new Model 300 tractor. The backhoe is available with a hydraulically-controlled telescopic boom digging 10 feet, 6 inches deep, or a standard boom digging 8 feet deep. The tractor-shovel may be equipped with a utility bucket, manure fork, hoisting crane, dozer blade or fork lift.

An important feature of the Model C-10 backhoe is a new type of parallel circuit control valve, with free oil flow, which facilitates digging and dumping in one smooth, continuous operation. A new regulator valve enables the operator to adjust down pressure to suit the digging conditions. Both the hydraulically-controlled boom and the standard boom provide an ample loading height of eight feet.

The new hydraulic backhoe and tractor-shovel are fully described in literature from the HENRY MFG. CO., INC., 1724 N. CLAY ST., TOPEKA, KANS. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 795.


ALGAE-FREE WATER
MEANS
Copper Sulphate
treated water
Not only is Triangle Brand Copper Sulphate successful in controlling algae but it also is effective in killing some aquatic weeds. Since the weeds are submerged and disintegrated, there is no chance of them floating down stream to start new infestations, or to clog the waterway.
In sewage systems, Triangle Brand Copper Sulphate prevents roots and fungus from clogging pipes. However, there is no danger of affecting the surface trees owing to the low concentration of copper sulphate necessary to be valuable.
The new booklets "The Use of Copper Sulphate in The Control of Microscopic Organisms" and "Copper Sulphate for Root and Fungus Control in Sanitary Sewers and Storm Drains" will keep you up to date. Send for a copy today! Phelps Dodge Refining Corp., 40 Wall Street, New York 5, N. Y. • 5310 W. 66th St., Chicago 38, Ill.
PHELPS DODGE REFINING CORP.
PHELPS DODGE REFINING CORPORATION
BICROLS
TRIANGLE BRAND
CHEMICALS
40 WALL ST. NEW YORK

Full catwalks with streamlined skirting

State highway departments like

Abbreviated catwalk with tire flaps front and rear

the NEW LITTLEFORD

MODEL D SPRAY LEADER

the first low cost distributor you can buy with just the right amount of equipment for your requirements . . . no more, no less. And with the new Model D you get ***your choice of 2 types of circulating spray bars:*** automatic or mechanical. Most important, the Spray Leader has the ***same operating system*** used in the more expensive Littleford distributors. If you need a good, basic distributor at the lowest cost, the new Model D Spray Leader is your best buy. Send today for free descriptive bulletin 14-D.

LB LITTLEFORD

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE 1900

LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

NATURAL RUBBER-ASPHALT ADDITIVE MEALORUB

MEALORUB is the authentic natural rubber powder used in most test roads throughout Canada and the United States.

MEALORUB is available competitively—Immediate delivery—Guaranteed Freeflowing.

MEALORUB is 90 to 95% pure natural rubber. Lasting results as proven by actual roads now in use over fifteen years—not based on lab tests alone.

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CHEM WEED BRUSH KILLER

(2, 4-D + 2, 4, 5-T)
For Brush Control

CHEM SEN 56

For Soil Sterilization
Aquatic Weed Control
(Submerged & Non-Submerged Aquatics in Ponds & Lakes)

We are currently working with many municipalities regarding these problems. We invite your inquiry.

CIC
CHEMICAL INSECTICIDE CORPORATION
129 Montague St. B'klyn 1, N.Y.
ULster 2-5200

Purchasing

New Chain Wrench Works in "Tight Corners"

The chain-and-jaw grip of this new chain wrench enables it to work in "tight corners," between parallel pipe lines, close to baseboards, and wherever there is too little clearance for the head of a conventional wrench. The wrench will hold and turn any shape—round, square, hex or irregular—firmly, without play and without crushing. It is available in 10-, 14-, 18-, 24- and 36-inch lengths.

This 14-inch model is available with additional chain, enabling the wrench to hold pipe up to four inches in diameter.

Using the new chain wrench, the operator can tighten and back-off a pipe or fitting without taking the wrench from the pipe or changing the setting. The special design of the steel jaws permits a fast, ratchet-like action in either direction from either side of the pipe or fitting.

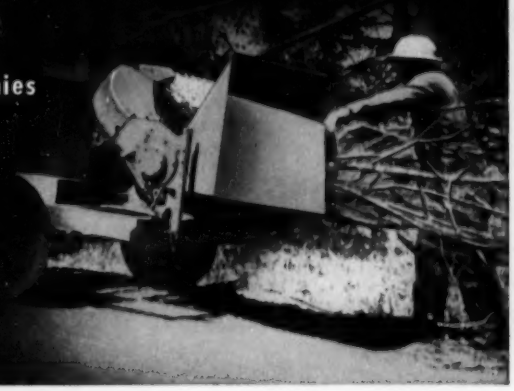
Additional information on the new wrench is contained in *Bulletin CWP*. For your copy, write the REED MFG. CO., ERIE, PA., or you may use the Post Card on the insert following Page 282. Circle No. 809.

Appoints New Distributor

The Reid-Holcomb Co., Indianapolis, Ind., has been appointed new distributor for the complete line of road roller and compaction equipment manufactured by the Buffalo-Springfield Roller Co., Springfield, Ill. This line includes standard tandem rollers, heavy-duty 2-axle tandem rollers, a 3-axle tandem "walking beam" roller, variable weight 3-wheel rollers, and a small, portable roller. Also a new, segmented 4-wheel K-45 Kompactor.

Why FITCHBURG CHIPPERS are the favorite of ALL FOUR

- Power Companies
- Municipalities
- Utilities
- Tree Surgeons



Solves Brush Disposal

Instant brush disposal—right on the spot! That's why so many leading power companies, municipalities, utilities, and tree surgeons now cut disposal costs—chip brush, branches, trimmings with powerful Fitchburg Chippers. Eliminate hauling, burning—with its fire hazard, extra labor, inconvenience. No waiting. Chip in any weather, wet or dry. Here's a clean, acceptable method of disposal that wins public approval and good will.

Saves You Labor

Read what users say. From a Missouri utility line clearance firm: *"One man can operate the chipper with ease. He alone can handle as much and more brush in the same length of time as could two men loading brush on a platform body."* From a Connecticut tree expert: *"This chipper has cut our brush disposal in half. It has eliminated brush dumps and fires completely."* One large Ontario power customer reports a saving of 25% in man hours expended per tree as a result of equipping their crews with Fitchburg Chippers.

Increases Your Production

In Oregon the Roadmaster for one county said: *"This Fitchburg Chipper has paid for itself twice over the first season."* Another chipper user on Washington State Highways reports that with a crew of three men they can clean up at least a half mile of heavy brush in six hours. A Missouri utility line clearance firm says: *"Our figures show that production has been increased by a good 25% with a Fitchburg Chipper."*

Stays Out of the Shop

Read what satisfied users say. Connecticut: *"The Fitchburg Chipper has never cost us one minute of delay."* Ohio: *"We now have ten of your Fitchburg trailer type chippers. Doing a good job—from the looks of them they will last for many years."* New York: *"Our men are particularly pleased with Fitchburg Chippers. They are rugged and reliable."*

FREE BOOK GIVES FACTS

READ the actual letters from which the quotations above were taken. Free, colorful, Fitchburg booklet gives full data and specifications—gives actual names, companies, places. Send for it now—it's free.

FITCHBURG ENGINEERING CORPORATION
Dept. AC-65, Fitchburg, Massachusetts
Please send Fitchburg Chipper booklet.

*Name*_____
*Company*_____
*Address*_____
*City*_____ *State*_____

Are your Records REALLY safe from fire?

WHAT HAPPENS to public records when fire strikes? In Vinton, Louisiana... Lake City, Florida ... Cumberland, Maryland, they were totally destroyed. On the other hand, Water Office records in Port Huron, Michigan were not even damaged, despite flames which reduced the building to rubble and tons of water used to extinguish them.

The difference? Insulated filing equipment from Remington Rand. Only the year before, these records had been moved to four newly purchased Remington Rand Safe-Ledger Trays for *certified, point-of-use protection against fire.*

Why not take the right steps now? The key to the affairs of the city, county, or state lies in its records. When it comes to protecting vital public records, it's never too early to take needed precautions ... often too late.

Write today for folder RG599, "A Public Record is a Public Trust," for a graphic picture of what happened to unprotected public records when fire struck. Ask for folder RG556 to see what a big difference Remington Rand *certified,* insulated, point-of-use protection against fire meant in Port Huron, Michigan.

address requests to Room 1643

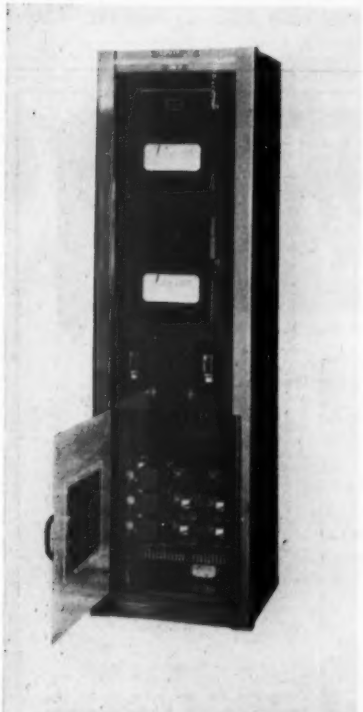
Remington Rand
315 Fourth Avenue, New York 10, N. Y.

Brooks to Operate As Borg-Warner Subsidiary

Acquisition of the Brooks Equipment and Mfg. Co., 2032 Davenport Rd., Knoxville, Tenn., by the Ingersoll Kalamazoo (Mich.) Division of the Borg-Warner Corp., is announced by J. H. Ingersoll, president of Ingersoll Kalamazoo. The Brooks company, manufacturers of the well-known Load Lugger materials handling device, will be operated as a subsidiary of Borg-Warner.

Mr. Ingersoll, who is also president of the Ingersoll Products Division and the Ingersoll Conditioned Air Division of Borg-Warner, will head the new subsidiary. New vice-president of Brooks is R. F. Schutz, manager of Ingersoll Kalamazoo and vice-president of the Wausau Mfg. Co., another Borg-Warner subsidiary. Main offices of the Borg-Warner Corp. are located at 310 S. Michigan Ave., Chicago 4, Ill.

Remote Control System for Municipal Waterworks



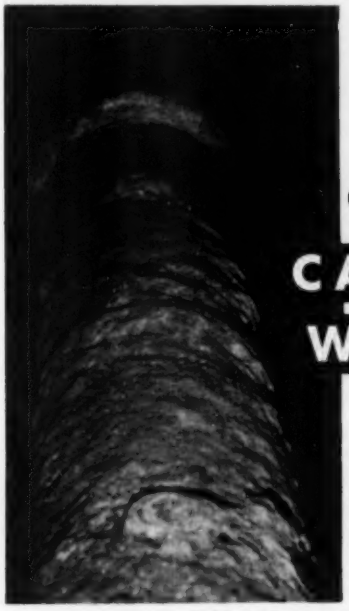
Remote terminal equipment for controlling municipal water supply operations.

The centralized control of pumps, valves and other equipment by municipal waterworks is easy with remote control and telemetering, using a single communications circuit.

This centralized operations control is provided by Hammarlund equipment which makes use of audio tones for sending signals for ON-OFF and RAISE-LOWER controls of pumps, valves and other remotely located equipment, and the simultaneous and continuous reporting of information on pressure, flow and other necessary data. Waterworks engineers can operate this equipment without extensive electronic training. It eliminates multiple communications lines, and incorporates many of the instruments presently in use in your water plant.

The control equipment works with either the impulse-duration type of telemetering or low-frequency FM equipment, providing continuous information display at the central control points.

For detailed information on this new remote control system for municipal waterworks, write the HAMMARLUND MFG. CO., INC., 460 W. 34TH ST., NEW YORK 1, N. Y., or you may use the Post Card on the insert following Page 282. Circle No. 798.



MONTREAL Uncovers Continent's Oldest CAST IRON WATER MAINS

Recent excavations in Montreal, Canada, uncovered the oldest known water mains still in service on the North American continent.

The mains—several thousand feet of cast iron pipe—were laid 138 years ago to replace original wooden mains laid in 1800.

Historically interesting as was this discovery, the record revealed of more than a century-old cast iron pipe service is by no means unique. In Versailles, France, cast iron mains installed in 1664 are still functioning. In Germany there are several authenticated lines in use today after **two centuries** of service! And in many American cities the original cast iron mains are still in perfect condition after serving for generations.

Reason for the long life and long run economy of cast iron pipe is its effective resistance to rust. It is the one ferrous metal for water, gas mains and sewer construction that will not disintegrate from rust.

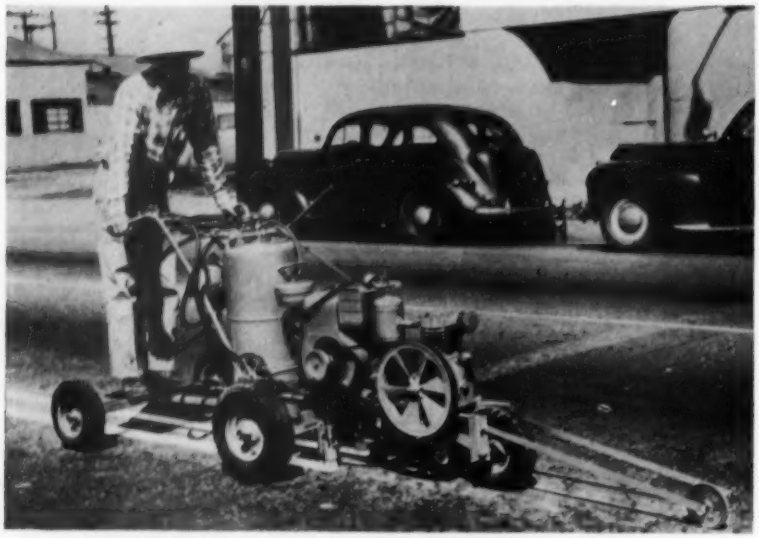
* * * * *

Our Company does not manufacture cast iron pipe, but produces quality iron from which quality pipe is made by many of the nation's leading foundries.

WOODWARD IRON COMPANY

WOODWARD, ALABAMA

Makes Clean, Straight Centerlines



New striping machine paints single or double, solid or skip lines.

Simplify your city's line-marking problems with the Mark-Rite Model 8088, a self-propelled unit that paints single or double, solid or skip lines, quickly, efficiently and economically. The new striping machine features automatic guns, air actuated, with adjustable fluid control. These spray guns are easily flushed for cleaning and quickly accessible without disassembling the machine.

The spray guns are available with either spray shields or tubes. Shields are spring loaded and adjust automatically to uneven street surfaces. The guns and shields are located at the pivot point of the machine, assuring full width lines on curves and turns. Controls for the guns and clutch are conveniently located on the handle bars.

Each Mark Rite Model 8088 is equipped with a vertical paint tank that is easily removed. A roller-type clutch transmits power to the rear-drive wheels, and the machine turns freely in either direction with the power on. A 2-cylinder, air-cooled 9.3 cfm displacement compressor furnishes 50% more air than is required by the guns and controls.

Detailed information on the new striping machine is available from the UNIVERSAL MFG. & SALES CO., 5211 PACIFIC BLVD., HUNTINGTON PARK, CALIF. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 792.

BORE with **HYDRAUGER**

(EARTH BORING MACHINE)

Designed for maximum control of the reamer. Earth along the pilot bits acts as a bearing to steady the reamer assuring an accurate hole.

FREE BOOKLET.. SEND COUPON BELOW

HY-250

HYDRAUGER CORP., LTD. 681 MARKET ST. SAN FRANCISCO

Please send, without obligation to me, the HYDRAUGER BOOKLET which shows relative costs and speeds of BORING as well as specifications of various Hydrauger models.

NAME _____ ADDRESS _____

CITY _____ STATE _____

GEOPHONE locates leaks without digging

**Trademark Reg. U. S. Pat. Off.*

When the discs are placed on the ground (as pictured) the Globe Geophone detects by sound the exact location of leaks in water or steam pipes. Acclaimed for its accuracy, the Globe Geophone has become indispensable in Public Works Departments and Industrial Plants throughout the United States.

• MONEY-SAVING

You save the costly expense of extensive surveys, excavating and replacing. The inexpensive Globe Geophone pays for itself many times over in money saved.

• ACCURATE

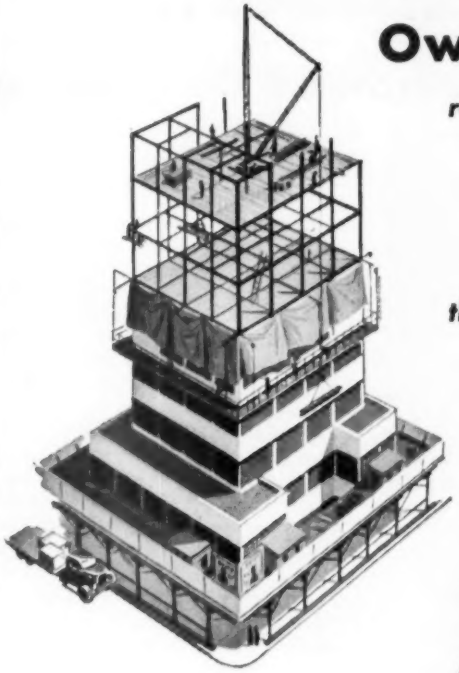
Operating on the principle of the seismograph, the Globe Geophone is without question the most sensitive and reliable instrument for detecting underground leaks.

Complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap **$95**

Pipe Phone $4.70
(Aquaphone)

Globe Phone Mfg. Corp. Reading, Mass., U. S. A., Dept. Y

Manufacturers of Geophone Since 1918



Owners and Contractors

require the protection of

BUILDERS RISK INSURANCE

(Fire and Extended Coverage)

throughout construction.

National Surety's facilities have been broadened to include the issuance of this form through its country-wide network of agents.

NATIONAL SURETY CORPORATION

4 ALBANY ST., NEW YORK

A MEMBER OF THE FIREMAN'S FUND INSURANCE GROUP

NOW! even the smaller cities can afford A Seagrave Aerial Ladder

CLIP AND MAIL THIS COUPON →

Smaller cities, volunteer and industrial fire departments. . . . You can now have a Seagrave All-Steel Aerial Ladder at economical price. This economy model is ALL SEAGRAVE built on a commercial truck chassis . . . one hundred percent hydraulic hoisting mechanism and 65-foot ladder, Seagrave body and controls. No other aerial equals its quality construction for the price.

THE SEAGRAVE CORPORATION
Dept. A—Columbus 7, Ohio

We are interested in your new aerial ladder.

Name .....

Title .....

Street .....

City ..... State .....

Facts Speak for Themselves...

Rochester, New York, purchased the following refuse collection units

in 1953

12—ROTO-PAC
12—TYPE A (competitive unit)
12—TYPE B (competitive unit)
12—TYPE C (competitive unit)

in 1954

12—ROTO-PAC
9—TYPE A
3—TYPE B
NONE—TYPE C

in 1955

21—ROTO-PAC
NONE—TYPE A
NONE—TYPE B
NONE—TYPE C

ROCHESTER like so many other cities across the country has discovered that PERFORMANCE IS THE ROTO-PAC's BEST SALESMAN . . .

They learned that the ROTO-PAC collects more refuse per shift than other type units—that the ROTO-PAC requires no control of loading, the operation being continuous . . . that the operating personnel by a vast majority prefer the ROTO-PAC . . .

Experience is a wonderful teacher and ROCHESTER'S experience with the ROTO-PAC has taught them, just as it did PHILADELPHIA, that the ROTO-PAC "has been determined to be the only satisfactory body because of its faster loading, more complete filling and overall daily productivity with minimum overtime."

YOUR CITY CAN ACHIEVE FASTER, CLEANER, MORE ECONOMICAL REFUSE COLLECTION WITH ROTO-PAC

For further information, write to

CITY TANK CORPORATION

53-09 97th Place • **Corona 68, N. Y.**

New Ditcher Speeds Pipe Laying Operations

It's fast and easy to install water nd sewer pipe, conduit and cable, with this new heavy-duty, wheel-type ditcher. The Buckeye 308 will dig up to 5 feet, 6 inches deep, and features an optional width of cut varying from 16- to 32-inch increments. A fast, flexible machine, it digs in all types of soil and under almost any job condition.

A live hydraulic wheel hoist on the Buckeye 308 provides quick, accurate positioning of the digging wheel. This hoist is operated by simple controls from the operator's seat, and the lowering and raising of the digging wheel is completely independent of digging, wheel or crawler speeds.

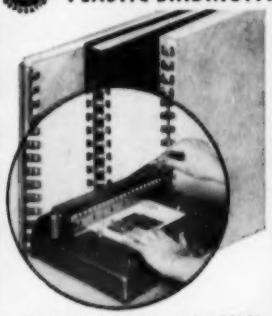
A hydraulic drive eliminates shock damage from the soil discharge conveyor. Complicated mechanical units have been removed from the design, and the hydraulic drive is completely controlled from the operator's seat. The forward and reverse belt drive is furnished in a selection of three speeds to meet varying conveyor requirements.

Shock damage from the soil discharge conveyor is eliminated by a hydraulic drive controlled from operator's seat.

The Buckeye 308 has 16 digging speeds forward, ranging from .80 to 19.10 feet per minute. A high-low range shift permits fast speed-up or quick slow-down in digging travel without declutching the engine or stopping the digging wheel, an important feature when maneuvering close to obstructions.

Full details on the new Buckeye 308 are available from GAR WOOD INDUSTRIES, INC., WAYNE, MICH. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 790.

Now you can BIND with GBC METAL LOOSE LEAF and PLASTIC BINDING...



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Improve all your literature . . . guarantee maximum attention and action for every message . . . add prestige, utility, color to reports, manuals, catalogs, etc. Pages lie flat, turn easily, can be interchanged between GBC Metal Loose Leaf and Plastic Bindings.

FREE RICHLY ILLUSTRATED brochure shows how GBC Metal Loose Leaf and Plastic Binding use same punching machine and identical punching pattern. Get your copy today. No obligation.

GENERAL BINDING CORP.
812 W. Belmont Ave.
Dept. AC-65
Chicago 14, Illinois

PROFESSIONAL PLANNERS Wanted

In San Diego. Entrance Salary $327 or $360 depending upon experience.

Apply:

City Civil Service
Room 453,
Civic Center,
San Diego, Calif.

FOR WATER ON THE SURFACE DON'T DEPEND ON SURFACE WATER!

You *can* depend on Pleuger Submersible Pumps. They're the only Submersibles with water-filled and water lubricated motors that do not require any seal or stuffing box to assure dependable operation at any depth.

- From ½ H.P. to 1000 H.P.
- For 4" up to 22" wells.
- Capacities from 10 to 4,000 gal./min.
- Operates in water, mineral springs or brine wells.

SUBMERSIBLE PUMPS, INC.

PLEUGER

960 Harrisburg Ave.
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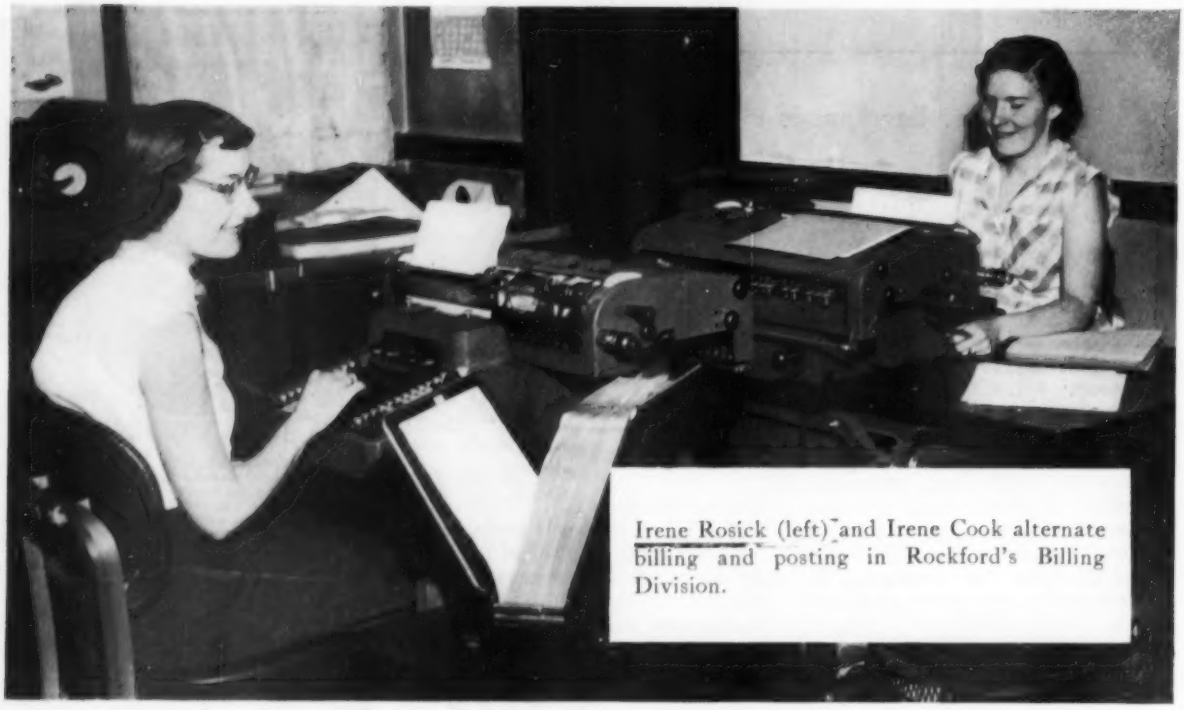
Pleuger in California
11840 W. Pico Blvd.
Los Angeles 64, Calif.

24 HOUR PARTS SERVICE VIA AIR EXPRESS TO ANY POINT IN THE U.S.A.

For details on a profitable Pleuger franchise, write today.



Irene Rosick (left) and Irene Cook alternate billing and posting in Rockford's Billing Division.

How Rockford, Ill. added rubbish charges to water bills and cut billing time with Underwood Sundstrand Accounting Machines

Two years ago the Billing Division of the City of Rockford, Illinois, Water Department took over the responsibility of billing and collecting rubbish charges on the water bills. The change-over was made easily on Rockford's versatile Underwood Sundstrand Accounting Machines. Moreover, the machine operators were soon able to increase output from 300 bills a day to 450 — a one-third reduction in billing time in spite of the added rubbish charge. Savings in time, work and money are not at all unusual when Underwood Sundstrand Accounting Machines are correctly applied.

We'd like to give you more details. Why not write us today?

Underwood Sundstrand Accounting Machines are used for billing water, electric, sewer and refuse charges, for tax billing and accounting, budgetary work, purchasing, payroll and inventory accounting. Simple 10-key keyboard allows fast, accurate touch operation. Write for particulars.

UNDERWOOD CORPORATION

One Park Avenue, New York 16, N. Y.

Positive Reproductions from Negatives

Ozalid Reversal Foil bypasses photographic processing steps to produce a positive image of charts, photographs and layouts directly from a negative. The new product can be exposed and developed in seconds in an Ozalid machine. It is then used to reproduce any number of Ozalid copies.

Reversal Foil will also give positive reproductions of transparentized photostats and blueprints. Line, halftone or continuous-tone originals can be copied quickly and inexpensively.

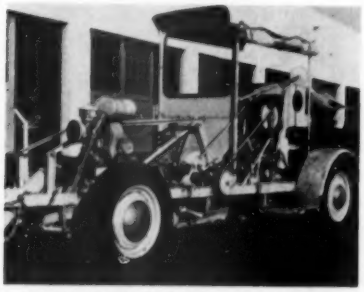
For additional information, write directly to OZALID, DIVISION OF GENERAL ANILINE & FILM CORP., JOHNSON CITY, N. Y., or you may use the Post Card on the insert following Page 282. Circle No. 793.

New Distributor Announced

Exclusive sales and parts service of Koehring, Johnson and Kwik-Mix construction equipment in Northern Louisiana will be handled by Contractors Equipment Co., Inc., according to a recent announcement. Located at 3111 Louisville Ave., Monroe, La., the newly appointed distributor is headed by C. K. McClure, president and general manager. C. E. Burton is sales manager, and M. H. Goddard, service manager.

Both C. S. Johnson, of Champaign, Ill., and the Kwik-Mix Co., of Port Washington, Wis., are wholly-owned subsidiaries of the Koehring Co., Milwaukee, Wis.

One Unit Sweeps and Paints Traffic Lines



The California Division of Highways uses this convenient rig to clean and paint stripes on its highway system.

Like many other states, California maintains paint and glass-bead stripes to channel traffic into proper lanes and to assist motorists in fog and darkness. Laying down these stripes requires firm bonding with the pavement which must be clean, dry and free of all loose particles.

To simplify this line-marking job, the California Division of Highways has designed and built a combination line-sweeper and paint-gun carriage. The sweeper, a traveling brush arrangement, cleans painted stripes just a jump ahead of the paint-gun carriage with which it is jointly housed. This sweeper consists of a gang of six 10-inch-diameter brushes, each two inches wide, turning on a single shaft which revolves at about 250 rpm.

Power for the entire arrangement is furnished by a K-90-RT engine, equipped with retractable starter and reduction unit, and made by the Kohler Co., of Kohler Wis. The engine is an air-cooled unit developing 3.6-hp. Quick starting is provided by the self-contained retractable starter. The reduction unit furnishes a 6.1 ratio for low power take-off speeds. Fuel capacity is one gallon, and the engine weighs about 50 pounds.

Part of an Abrams mosaic of St. Petersburg, Florida

Base Your Planning

on an Abrams Aerial Survey

Atlanta, Georgia and surrounding Fulton County, air-mapped by Abrams, used a mosaic and enlarged prints to re-plan, to re-assess property, and re-route rail and highway traffic in the 165 square mile area at a huge saving in time and money.

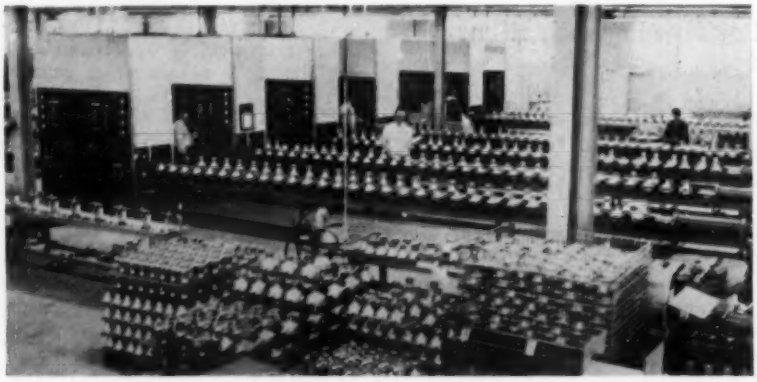
Flint, Michigan solved its water problem for the next 20 years by the use of aerial survey and the damming of a small stream. The engineers report that without the 75% savings as compared to ground survey, the dam couldn't have been built.

The American Road Builders Ass'n. Task Force report, highly recommends aerial survey. It states, "Location and cross-section surveys — can and should be performed more extensively by aerial photogrammetry" and "are prerequisites of economy in personnel."

Let us tell you what aerial survey can do for you.

Abrams Aerial Survey
CORPORATION
Lansing, Michigan, U.S.A.

Water Meters for Every Home by 1960



Meters receive exceptionally careful testing at the new Rockwell plant, Uniontown, Pa.

Practically every urban home in the United States will be equipped with a water meter by 1960. This is the forecast of L. A. Dixon Jr., vice-president in charge of the Rockwell Manufacturing Company's meter and valve division, expressed at the formal opening of Rockwell's new 81,500 square-foot water-meter plant located at Uniontown, Pennsylvania.

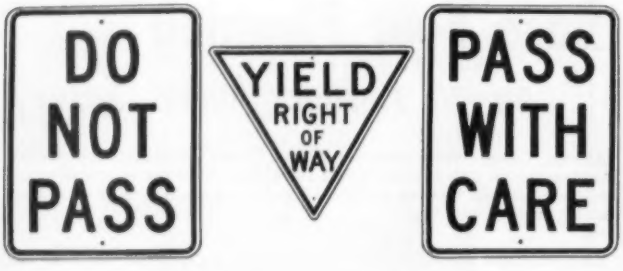
L. A. Dixon Jr.

Recent drouths and shrinking reservoirs throughout the nation are driving the remaining unmetered cities to the basic conservation that meters provide, said Mr. Dixon. The history of metering shows that it reduces irresponsible expenditure of water in every city where meters have been installed, sometimes cutting the per capita use by almost 50%. For this reason, practically ll cities in the Southwestern section of the United States and other largely dry areas have been metered for many years.

Until recently, many Eastern cities have ignored the trend toward metering because they have had ample supplies. However, the geographical boundaries of so-called "dry" areas are disappearing, Mr. Dixon explained. In Pennsylvania alone, for example, Easton has recently adopted a policy of complete metering, Philadelphia is undertaking a similar program, and Pottstown, York, Coatesville, and Hanover have all either just installed or are about to install meters.

Mr. Dixon pointed out that water

Recently Adopted U. S. Standard Signs You'll Find in the **NEW** *Lyle Catalog*



LYLE HAS THEM

For latest signs, for all your signs. LYLE HAS THEM!

Just Out!—Lyle's New 40-page Sign Manual; it catalogs hundreds of street, traffic and warning signs and the latest information on current U.S. Standards.

Write for your free copy today!

LYLE SIGNS, INC.

2723 UNIVERSITY AVE. S. E.
MINNEAPOLIS 14, MINNESOTA

KEEP YOUR MEN BUSY DURING BAD WEATHER

Making Your Concrete Park And Picnic Equipment. City Commissions are finding that citizens appreciate an Attractive Community.

Begin making your improvements—NOW

The ANSWER—CMC ALUMINUM MOLDS

Write for illustrated catalog

CONCRETE MACHINERY CO.

Drawer 60

HICKORY 19, NORTH CAROLINA

shortage is not the only reason for many communities switching to metering after doing without it for many decades. Increased pumping costs are also a major factor. Cities like Pittsburgh, that will probably never face a drouth, are recognizing the need for meters to distribute costs equitably among water users.

The new Uniontown plant, now in full production, produces all of Rockwell's domestic water meters, ranging from ⅝-inch to 1¼ inches outlet diameter. These meters include two major types, the nutating disc and oscillating piston. They can measure flows from ¼-gallon to 50 gallons per minute. Larger Rockwell meters will continue to be manufactured at the company's Brooklyn (N. Y.) plant.

Uniontown's unusually high water pressure, coupled with the plant's new testing equipment, enables Rockwell to test the meters at pressures 2½ to 3 times as high as those usually found in water systems.

New Pedestrian Signal

The 3-inch letters in an Eagle pedestrain signal are clearly legible across a

wide street or from an off-angle. To avoid confusion with neon advertising signs, the "wait" or "don't walk" lenses are furnished in red or Portland orange. "Walk" lenses are furnished in green or lunar blue.

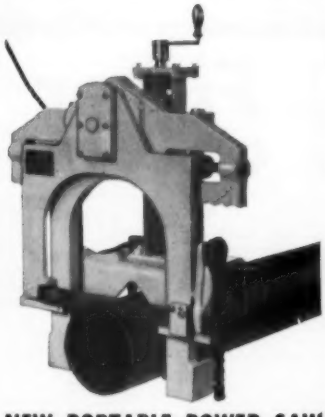
The square shape of the lens distinguishes the pedestrian signal from traffic lights so that pedestrians can readily identify this signal for just what it is.

Detailed information on the efficient new signal is contained in *Bulletin A10-C*. For your copy, write the EAGLE SIGNAL CORP., MOLINE, ILL., or you may use the Post Card on the insert following Page 282. Circle No. 796.

Telescoping Bleachers Use Less Space

You can seat more spectators and, at the same time, provide a greater utility of gymnasium space, with the new Leavitt Telescoping Bleacher. These practical units move on wheels, rolling at the top and bottom. They are designed with an automatic steel locking device at each extended position. Safety is assured by a self-supporting steel understructure with twin tubular supports welded in pairs to form a truss.

In addition to Telescoping Bleachers, the company offers a Knockdown Portable Wood Bleacher, Steel Grandstands, and the Add-A-Seat Stadium Bleacher. Get full details by writing directly to the LEAVITT BLEACHER CO., URBANA, ILL., or you may use the Post Card on the insert following Page 282. Circle No. 797.



NEW PORTABLE POWER SAW SPEEDS CUTS IN TIGHT PLACES

On 2", 4", 6" & 8"
Cast Iron and Steel Pipe

WACHS GUILLOTINE SAW FACTS—

- Cuts 6" cast iron pipe in 4 minutes
- Cuts 6" steel pipe in 8 minutes
- Weight 120 pounds
- Width 22¼"
- Height 28"
- Depth 12"
- Set up time, less than one minute
- Power — electric or air motor
- *For further information write to:*

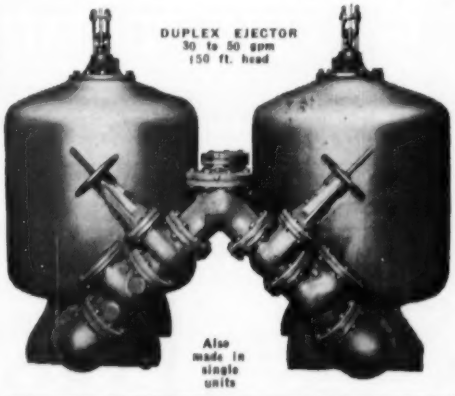
THE E. H. WACHS COMPANY
1525 N. Dayton Street • Chicago 22, Illinois

Today's Facts on Modern **SEWAGE EJECTION**

Blackburn-Smith Mfg. Co., Inc.
57 Garden Street, Hoboken, N. J.

I want to know how I can get better sewage ejection at lower cost.

Name.....
Company.....
Address.....
.....



BULLETIN S-50

for look-ahead municipal engineers

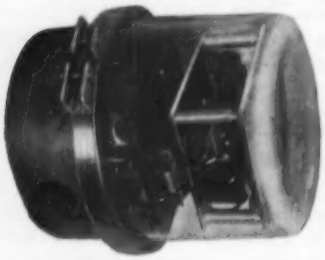
Get the facts you want on how to eliminate costly, complex piping for air and water, messy, unsanitary screens, impellers, shredders, expensive pump cleaning . . . in short, the facts on simple, dependable, economical, clean Blackburn-Smith Ejectors. Valves and switches are controlled automatically for unfailing operation by electricity, by floats, and by pneumatic action. Learn how simple, compact, and inexpensive they are to install, operate, and maintain compared to complicated systems. Get today's facts today—Send the coupon in now!

Features of BLACKBURN-SMITH EJECTORS

Switches operated automatically by float and electrical controls.
Snap-action valve controlled automatically, pneumatically and by float. Electrode controls.
Compact . . . motor compressor assembly and controls in "one package" unit.
Steel construction. Welded steel pots.
Simple piping for air, water.
No clogging screens, impellers, shredders.
No messy pump cleaning. Sanitary.
Unfailing, dependable operation.

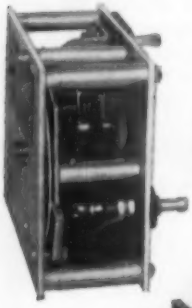
BLACKBURN-SMITH MFG. CO., Inc.
57 GARDEN ST., HOBOKEN, N. J.
HO 3-4435 • N. Y. Tel., BA 7-0600

TIME-O-MATIC FLASHERS JACK MOUNTED

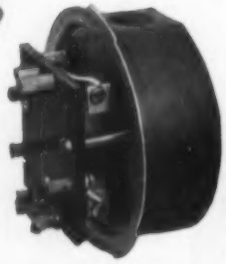


Time-O-Matic Jack Mounted Flasher in Standard Meter Case

Single or two circuits, every model with built-in eliminators. Available with standard meter case (above) or separately with Jack mounting panel (below).



Time-O-Matic Jack Mounted Flasher Only



Time-O-Matic Jack Panel in Meter Case

SPECIFY DEPENDABLE TIME-O-MATIC

↓

"A Sign of Good Control"

•

TIME-O-MATIC CO.
1108 Bahls Street
Danville, Illinois

Purchasing News

New Towel Dispenser Attaches to Waste Receptacle

Wherever there is room for a Bennett self-closing waste receptacle, there is a location for this combination towel dispenser kit and waste receptacle. The kit consists of two paper towel dispensers permanently mounted to a bracket which provides a self-contained unit. A screw driver is all that is needed to clamp the kit onto the container.

The new twin towel dispenser kit eliminates steps from the dispenser to the waste receptacle, and makes it unnecessary to deface walls or tile. Paper towels are fed from both sides of the kit, permitting twice as many people to obtain, use and deposit paper towels twice as fast.

These kits are available in white enamel or chrome finishes for single or double-fold paper towels. For complete information, write THE BENNETT MFG. CO., ALDEN, N. Y., or you may use the Post Card on the insert following Page 282. Circle No. 787.

A twin towel dispenser kit clamped onto a Bennett self-closing waste receptacle.

Filter SANDS Silica Quartz Flint **Filter GRAVELS**

WESTERN MATERIALS COMPANY
39 SOUTH LA SALLE STREET - CHICAGO 3, ILLINOIS
TELEPHONES: STate 2-5461
SINCE 1918

$50,000

We can help your City or County also on Workmens Compensation as we are helping such counties as the County of Erie, N. Y.

If you are paying $50,000 or over for Public Liability (including Sidewalk) and are having

TROUBLE

We may be able to help you as we have helped such cities as Norwalk, Connecticut for 3 years and New Haven for 19 years.

For further information, write or telephone

ROBERT F. COLEMAN Inc. 79 John St., New York COrtlandt 7-2436

Purchasing

First Pigeon Hole Garage In New England

The first mechanized Pigeon Hole Parking Garage in New England was opened in Hartford, Conn., on May 16, 1955. It is the 33rd unit in operation, including three in South America.

The latest "cote" was erected in 51 working days, according to Harold P. Hallock, vice-president of Fairfax Service, Inc., in charge of sales for the Pigeon Hole system in thirteen states. Lower initial cost, lower operating costs, receipt or safe delivery of a car in less than one minute are the advantages claimed.

For further information, address PIGEON HOLE PARKING, INC., PEYTON BLDG., SPOKANE, WASH., or you may use the Post Card on the insert following Page 282. Circle No. 813.

Lightweight Clamp for Maintenance Hose

Wherever maintenance hose is used frequently, in parks, golf courses and cemeteries, these lightweight hose clamps will prove an invaluable aid. The clamps are easy to put on and make a leakproof connection that lasts for the life of the hose. They are completely effective in preventing hose fittings from slipping under pressure.

The new Punch-Lok hose clamp consists of a broad, flat band of high-tensile steel, double-wrapped around the hose,

with no bolts, screws or other projections to snag turf and lawns. After tensioning with a lightweight locking tool, the excess metal band is broken off flush with the "Lok" as shown in the above illustration.

Punch-Lok is a low-cost solution to a variety of clamping problems. For full details on this mechanical clamping method, write the PUNCH-LOK CO., 321 N. JUSTINE ST., CHICAGO 7, ILL., or you may use the Post Card on the insert following Page 282. Circle No. 810

"Our Sherman Power Diggers Are Easy to Handle and Maneuver in Tight Places"

One of the two Sherman Power Diggers owned by I. & M. Contracting Co., Bronx, New York, is shown on a trenching job for a public utility company in Long Island City.

Mr. Elio Mazella, co-owner of the contracting firm states: "Sherman Power Diggers are exceptionally good. They are easy to handle and maneuver in tight places. In comparison with former excavating methods, these diggers save us at least 70 per cent."

Sherman's speed, maneuverability and easy operation appeal to custom operators, contractors, utility companies, municipalities . . . everyone who wants the savings of mechanized excavating. Even on the smallest jobs the Sherman is practical, since it releases heavier equipment for bigger jobs . . . yet it digs in a fraction of the time and cost of manual labor.

Use the Sherman Power Digger as deep as 10 feet below ground . . . in mud, hardpan, shale, oiled roads, blacktop and stony ground. Initial cost is surprisingly low, and maintenance is simple and inexpensive. Ask your Ford Tractor dealer for an on-the-job demonstration, or write today for Bulletin No. 1018.

*Designed, Engineered and Manufactured Jointly by Sherman Products, Inc., Royal Oak, Michigan, Wain-Roy Corporation, Hubbardston, Mass.

•

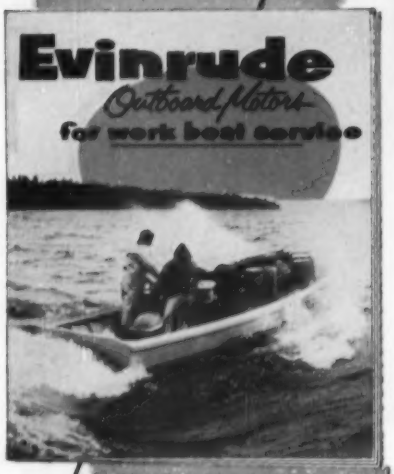
Patent No. 2-303-852
Other Patents Pending

•

©1955 Sherman Products, Inc.

Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS
Sherman SP Patents®

new book



☆ gives you the facts on

modern
OUTBOARD POWER
for
municipal
service

TODAY there's a *new kind* of outboard power for work boat duty! A complete line of new Evinrude *Aquasonic* models so advanced in capability, stamina, and smooth, quiet operation that they set entirely new standards of performance. Get the facts! Send coupon for booklet.

EVINRUDE MOTORS
Division of Outboard, Marine & Mfg. Co.
4626 N. 27th Street, Milwaukee 16, Wisconsin

Send me booklet on outboard power for work boat duty.

Name.....

Address.....

City.....Zone...State.....

(In Canada: Mfd. by Evinrude Motors of Canada, Peterborough)

Purchasing News

Michigan Governor Gets 1955 Layne Award

G. Mennen Williams, governor of Michigan, received the 1955 Layne Award recently, in recognition of the state's promotion of Michigan as a "Water Wonderland." Present at the presentation ceremonies were (left to right): Ervin Stahl, district manager of the Layne-Northern Co.; Edward J. Rogers, president of the Layne-Northwest Co.; Governor Williams; J. I. Seay, president and chairman of the board of Layne & Bowler, Inc., Memphis, Tenn.; and A. O. Putnam, director of public relations.

Compound Melting Furnace Lights Instantly

Use this new Compound Melting Furnace, No. 1230, for quick street repairs and for repairing pipelines in waterworks plants. The instant-lighting furnace will melt tar for sealing the joints in concrete, compounds for setting machinery, and

FROM THE WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS

Let 1 instrument do all your work...

THE *Dualtronic* MODEL LC-5

Here is the instrument for which Municipalities have been looking... ONE instrument that locates Pipes, Leaks and Valves, yet costs no more. Model LC-5 not only saves you money but does the job accurately and dependably. Ruggedly constructed. Compact. Lightweight. Simple, one man operation. Model LC-5 is fully guaranteed.

plus these BIG features:

1. **Use as Pipe Locator, Leak Detector, Valve Locator.**
2. **Pin-Point Detection.**
3. **Automatic on-off and power switching.**
4. **Crystal microphone.**

The GOLDAK *Company*
Leading Electronic Manufacturers
1933

1544 W. Glenoaks Blvd.
Glendale 1, Calif.

WRITE FOR COMPLETE BROCHURE

jointing compounds for clay or cast-iron pipe. Lightweight, it is easily carried from one job to another, and burns without odors or noxious fumes.

To shut off the furnace flame on the No. 1230, you simply close the Insto-Gas cylinder valve located several feet from the furnace. This accurate flame control eliminates "boiling over" problems, reduces fire hazards, and prevents sludge or burned materials.

Featured are a No. 1230 furnace, a 14-inch No. 699 guard, a No. 1603 compound pot, and a No. "35" Insto-Gas Cylinder with 12½ feet of service hose.

Detailed information on the No. 1230 furnace is available from the INSTO-GAS CORP., 1977 E. WOODBRIDGE, DETROIT 7, MICH. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 806.

Kaiser to Buy Basalt Steel Division

The proposed purchase of the Steel Division of the Basalt Rock Co., Inc., by the Kaiser Steel Corp., 1924 Broadway, Oakland 12, Calif., is announced by Jack L. Ashby, vice-president and general manager of Kaiser Steel, and A. G. Streblow, Basalt president. Basalt operations in the fields of concrete aggregates, Basalite and related building materials will not be affected by the purchase.

The terms of the new agreement provide Kaiser Steel with two Balsalt plants, one located at Napa, Calif., near San Francisco, and the other at Fontana, near Los Angeles. Employing some 800 people, the plants produce large diameter expanded steel line pipe, medium diameter electric resistance weld pipe, large diameter steel reinforced concrete pipe, and a variety of fabricated steel products.

The mounted officer gives you

MAXIMUM CONTROL

when and where you need it

• School crossings • Highways and expressways • Special events
• Busy intersections • Fires and accidents • Residential patrol

Ask your Harley-Davidson dealer for your free copy —"More Effective Police Power".

HARLEY-DAVIDSON

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin

EXTRA REVENUE...the Attractive Way

• Allan Herschell Merry-Go-Rounds and other amusement rides, installed in parks, zoos and playgrounds, bring in big revenues and give children and adults a lot of fun. There is no objection to kiddie rides. They are clean, cause no litter, and add a bright, gay appearance to any outdoor operation. Kiddie rides available include Sky Fighter, Roller Coaster, Jolly Caterpillar, Tank, Boat, Auto and Buggy Rides. Gasoline Sports Cars provide actual driving experience to pre-teenagers. Built to Allan Herschell's high standards. Easy to operate, minimum maintenance. Write for illustrated catalog.

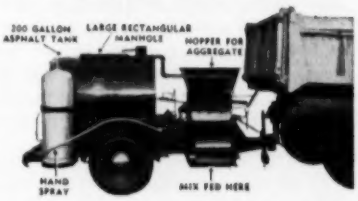
ALLAN HERSCHELL CO., INC.
NORTH TONAWANDA, N. Y.

"World's Largest Manufacturer of Amusement Rides"

"SHORT-ORDER HOT-MIX"

For Blacktop Maintenance With a New Cartwright

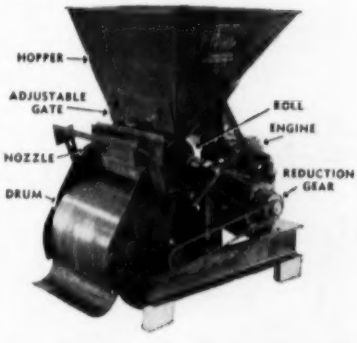
"PAVETTE"



Correctly and automatically proportions hot mix, right on the job as needed, in any small quantity desired from a half-shovelful to a wheelbarrow load. Reduces maintenance cost of blacktop because "PAVETTE" saves time, avoids waste of materials, and can be operated by only two men. Has 200 to 600-gallon tank, and hand spray for applying tack-coat to repair spot.

"PAVETTE" hitches behind maintenance truck and moves along street as repair work progresses.

Eliminates disadvantages of road-mix methods, cold-mix patching, and hauling plant-mixed material to the job.



for YOUR OWN tank unit

"PAVETTE" is furnished as a complete unit with tank and mixer mounted on chassis with two wheels as shown at top of this advertisement, or as a separate mixing unit (shown above) for mounting on your own maintenance truck or trailer.

For detailed information and prices, write to:

CARTWRIGHT INDUSTRIES, INC.

P. O. Box 3251, S. Highlands Sta.
Birmingham, Alabama

Abuse Tests on Highway Signs

In many areas a large percentage of highway sign replacement is due to vandalism by rocks, bottles, and sticks; knockdown, gunfire, and bending. Consequently, a material able to take abuse and still present a readable surface is of keen interest to traffic-control officials. Damage tests were made and recently reported by the Douglas Fir Plywood Association, located at Tacoma 2, Wash.

The damage created by flying missiles was about the same for all the plywood base signs. Generally, the Scotchlite sheeting was not damaged enough to affect the reflective properties of the material. With aluminum signs, the missiles damaged the Scotchlite in the contact areas directly over the sign post.

The damage created by the missiles appeared to be somewhat more extensive on steel than on aluminum. The primary damage done to the glass fiber sign was to flake off the surface of the sign, removing the color and the reflective material.

The plywood base products took the knockdown test without serious damage. The corner of the aluminum sign was bent back from the force of a single knockdown, and the contact end of the glass fiber sign was completely shattered by the impact with the floor.

Accurate gunfire will bring you sorrow

The plywood base signs showed considerable resistance to bullets. The average diameters of the bullet holes and shatter areas were: .22 caliber rifle—3/16-inch hole, ¼-inch shatter; 300 Savage rifle—5/16-inch hole, ⅜-inch shatter; and .38 caliber revolver—⅜-inch hole, ½-inch shatter. In only a few cases, and these to a limited extent, was the Scotchlite removed or loosened except in the immediate area where the bullet entered the sign face.

All bullets passed through the aluminum sign, creating holes considerably larger than the caliber of the bullet. The .22 caliber and .38 caliber bullets did not penetrate completely through the metal, but they did create large shock areas which removed the Scotchlite, exposing bare metal.

All bullets passed through the glass fiber signs, leaving jagged holes, and the shock was limited to the area immediately around the bullet hole.

The results of these abuse tests performed on the base products included in this project, the report concludes, indicate that plywood and plywood products possess a number of characteristics which make them generally resistant to the various types of vandalism and abuse to which highway signs are subjected.

Built in super strength at the point where ordinary refuse cans wear out makes the Nesco Streak-O-Strength last and last.

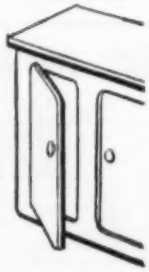
Sanitation approved because of *Leakproof* construction and Lok-Tite cover. Animal and insect-proof.

Rain drain cover sheds water and concave bottom prevents rust.

Oversize sturdy handles for easier handling by refuse collectors.

Hot dipped galvanized for longest life . . . built to the highest standards of the industry.

Heavy duty and standard weights available in *full capacity* 16, 20, 24 and 32 gallon sizes.



Write today for specification sheet on STREAK-O-STRENGTH and the complete line of NESCO galvanized ware.

NESCO

EXECUTIVE OFFICES
Milwaukee 1, Wis.

© 1955

You are always RYTE... with NESCO

Locates Buried Valves Quickly and Accurately

It's easy to locate buried valve and curb boxes with the new Aqua Valve Box Locator. The new unit features electric braking which eliminates "needle nervousness" and speeds up the locating process. It is always accurate regardless of such obstructions as overgrown grass, concrete walks, fill-ins, slides, or heavy ice and snow.

A shoulder strap on the new valve box locator permits an easy reading from a normal standing position. Further, each

unit is factory adjusted to the geographical location in which it will be used.

THE AQUA SURVEY & INSTRUMENT CO., 2010 WORTH AVE., CINCINNATI 12, OHIO,

is offering the valve box locator on a 15-day free trial period. For complete information, write the manufacturer directly, or use the Post Card on the insert following Page 282. Circle No. 803.

Hydraulic Loader for D4 Tractors

Ulrich's new Model D4 hydraulic loader mounted on a Caterpillar tractor.

Caterpillar D4 tractors with non-oscillating tracks can now be equipped with a new hydraulic loader, according to ULRICH PRODUCTS CORP., ROANOKE, ILL. The company has developed a new loader, Model D4-H, to replace outmoded cable-operated units. It features a sturdy construction, fast operation, and a wide range of bucket positions.

Detailed information on the economical Model D4-H loader is available directly from the Ulrich Products Corp., or you may use the Post Card on the insert following Page 282. Circle No. 816.

Fast, Easy Way to Patch Asphalt Streets

You can do all your street patching jobs quickly, easily and economically, with the new HTD-B asphalt mixer. The unit is quickly mounted on the rear of any standard dump truck, and will handle up to five tons of hot mix or 10 tons of cold mix per hour. Mounted, it is easily maneuvered, quickly moved from one location to another, and permits a small crew to haul, mix and lay asphalt with one unit.

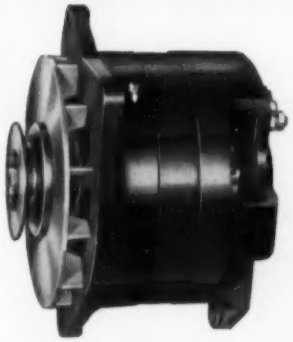
The new asphalt mixer is 6 feet wide, 2½ feet deep with the shoveling tray up,

(*Continued on page* 274)

Now EVERY city in America can afford

Leece-Neville

ALTERNATORS on all vehicles



SENSATIONAL LOW PRICE ON NEW L-N ALTERNATOR SYSTEM

The new Leece-Neville Alternator brings to light trucks, passenger cars, and other vehicles all the famous advantages that larger L-N Alternators have proved by performance for over nine years: charging current with engine idling, high output, low maintenance cost. Yet the new L-N Alternator System actually *costs less* than "extra" output d. c. generators.

L-N ALTERNATORS FOR EVERY APPLICATION

There's a right L-N Alternator for *every* vehicle. Capacities range from 60 amps for 6-volt systems to 180 amps for 12 volt systems. L-N Alternators will keep the equipment on the job and out of the repair shop.

For all the facts, write The Leece-Neville Company, Cleveland 14, Ohio. *Distributors in principal cities . . . service stations everywhere.*

ON YOUR NEW UNITS SPECIFY LEECE-NEVILLE EQUIPMENT, FACTORY-INSTALLED

YOU CAN RELY ON Leece-Neville

ALTERNATOR SYSTEMS • GENERATORS
STARTING MOTORS • REGULATORS • SWITCHES
FRACTIONAL HP MOTORS

TRUCK · BUS · DIESEL · INDUSTRIAL
PASSENGER · RAILROAD · MARINE · OFF HIGHWAY

or PLAIN, HEAVY GAUGE BONDERIZED STEEL or ALODIZED ALUMINUM

Cataphote is ready with reflectorized or plain signs—Stop, Warning, Speed & Movement, School and Parking Signs. Over 200 standard wordings. Immediate shipment of all but very large orders. Special wording sign made up quickly. Meet all U. S. Standard Specifications. Sign bulletin sent on request.

Orders For All Popular Size Aluminum Sign Blanks Filled From Stock.

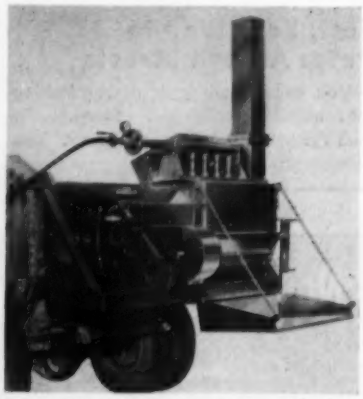
Cataphote CORPORATION
TOLEDO 10, OHIO
JACKSON, MISS.

- Button and Bead Reflectorized Signs
- Delineators • Street Name Signs
- Posts • Danger Signals
- Reflector Buttons

Purchasing News

(*Continued from* 273)

and 4 feet deep with the tray in working position. Without the stack, it is 4 feet high, and with the stack included, 7 feet high. The entire unit weighs some 1,160 pounds.



New asphalt mixer mounts quickly on the rear of any standard dump truck.

McConnaughay asphalt mixers are sold through the Asphalt Equipment Co., Inc., of Fort Wayne, Ind. They are described in literature from K. E. McConnaughay, Lafayette, Ind. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 811.

"Cat" Tractor Featured on Three Pies Stamp

A Caterpillar D4 tractor pulling a plow is featured on one of a new series of stamps issued recently by the Posts and Telegraph Department of India. This three pies stamp is the lowest denomination of an 18-stamp series designed to highlight the Indian Government's Five-Year Plan. It was officially issued on the nation's Republic Day, early this year.

The scenes on these stamps include a power loom, water pumping, a lady at Charkha, a Naga woman at a hand loom, a pair of bullocks, a malaria control project, a locomotive works, a view of Bombay, and an aircraft factory. Also featured are a valley in Kashmir, a technician at work at the Indian Telephone Industries, Cape Comorin, Kanchenjunga, a rare earth factory, a Sindri fertilizer factory, and the iron and steel industry.

This is the second time in recent years that a crawler tractor made by the Caterpillar Tractor Co., Peoria, Ill., has been

UNDERGROUND PIPING JOBS DONE IN LESS TIME AT LOWER COSTS

Here's the quick, simple way to install pipe under streets, walks, tracks, floors and lawns. With a Greenlee Pipe Pusher *one man* pushes pipe *under* obstacles. No tearing up concrete, lawns, floors. Eliminates extensive ditching . . . no tedious tunneling, back-filling, repaving. Cuts job time to a fraction . . . Greenlee Pipe Pusher often pays for itself on first job. Get facts today.

GREENLEE

Greenlee Tool Co., 2026 Columbia Ave., Rockford, Ill.

modern

SWIMMING POOL PAINT

Won't powder, flake or peel
Brushes on easily
Dries overnight

POOL-COTE is an economical chlorinated rubber base paint made especially for concrete and metal swimming pools to give maximum color-fastness under constant submersion. Comes in 10 colors; beautifies as it protects. Brushes on easily, flows smoothly, dries overnight. Inhibits algae growth; is not affected by pool chemicals and will not powder, flake or peel. No wonder pool owners and operators have praised POOL-COTE since 1935!

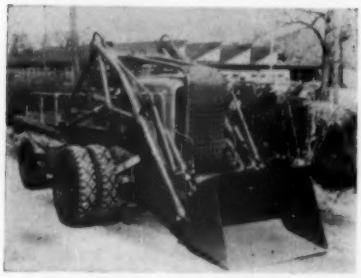
Everything for pools

Write for free color card, instruction folder and valuable reference catalog No. 3C showing over 100 pool supplies, chemicals and equipment manufactured by *Modern*.

modern
SWIMMING POOL CO., INC.
ONE HOLLAND AVENUE
WHITE PLAINS, N. Y.

illustrated on a nation's stamp. In 1954, the Bahamas issued a stamp showing a "Cat" D8 tractor mounted with a Fleco Root Rake and pulling a Rome Disc Plow.

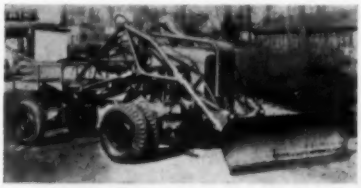
New Loader Attachment for Model "F" Tractor



This 1/3-yard bucket front-end loader is quickly and easily attached to your Worthington Model "F" tractor.

The Worthington Mower Co., of Stroudsburg, Pa., has introduced a new attachment designed to increase the usefulness of its Model "F" tractor on a variety of municipal applications. This handy attachment, a front-end loader with a 1/3-yard bucket and snow-plow, is quickly and easily attached to the tractor either at the factory or right on the job.

The new loader is ideal for use with sand, gravel, snow, loose dirt and coal.



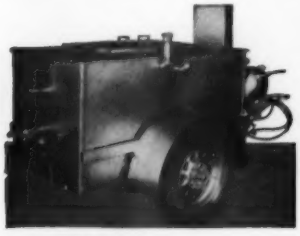
Model "F" tractor equipped with an efficient snow-plow attachment.

A plow-blade is interchangeable with the bucket. This changeover may be made in minutes, simply by making four bolted connections.

Detailed information on the new tractor attachment is available directly from the manufacturer, or you may use the Post Card on the insert following Page 282. Circle No. 812.

White HEATING KETTLES

FOR *SAFER* MELTING OF BITUMINOUS MATERIALS



Tool Heaters
Surface Heaters
Special F-10 Compound Kettle
Torches and Burners

Capacities from 80 to 325 gallons. All equipped with *exclusive* FIRE PROOF TOP (hinged tops available for roofing use). Operator and equipment are *protected* from flash fires. Complete line of accessories optional. Choice of kerosene and propane burners.

White MANUFACTURING COMPANY

ELKHART 1, INDIANA

BIONETIC:
the sewage operator's FRIEND

Foul Odors:

Who wants them? Certainly not the city managers or the sewage plant superintendents! Public Health authorities know that the psychological impact of odor is all out of proportion to its importance as a health hazard. But try to convince an irate citizen of that!

Now Is the Time to Meet That Odor Control Problem

Nationally Accepted:

Hundreds of cities and industries, with the use of semi-skilled labor, have eliminated their grease and odor problem through the BIONETIC method. BIONETIC eliminates foul odors that start at the point of transmission of sewage on the collection system. These odors are due to activity of bacteria on accumulated greases and sludges.

Simplicity and Economy:

Extensive tests have shown that excellent control procedures can be set up by first incubating BIONETIC for at least four hours before application. BIONETIC supplies odor-consuming organisms and works to eliminate grease and sludge from the collection system.

Dosage rates usually start at five pounds at each point of application. (Most operators feed BIONETIC above the point of odor on the line.) Then make a slurry with about 30 gallons of water or settled sewage, allowing it to stand for about four hours before feeding at control points. Dump it all in at one time during low flows.

Once control is established, repeat doses may be cut back and frequency of dosing judged on basis of sewage characteristics, weather, and conditions of collection system.

For further information or literature, write:

Reliance Chemicals Corporation
Bionetic Division
P. O. Box 6724 Houston 5, Texas

Makes Straight, Skip and Curved Traffic Lines

A 2-wheel assembly has been attached to the barrel of the new Florline Upright marking machine, enabling the operator to make straight traffic lines at a fast walking speed. These supporting wheels keep the machine "on track" with a minimum of direction from the operator. The new models are portable, easily maneuvered, and are constructed to remain in an upright position at all times.

A slight lift of the handle raises the brush of the Upright to allow the machine to make skip lines or be wheeled to other areas. Deliberate steering of the retractable guide-wheel to the right or left makes the curved line. In narrow, crowded areas, the Florline Upright is quickly converted to a 2-wheel machine.

When operated in crowded areas, the 2-wheel assembly may be removed.

The H. C. SWEET CO., 12345 TELEGRAPH RD., DETROIT 39, MICH., will furnish full information on the new line marking machine. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 808.

.....in a
SHARPSVILLE
CHALLENGER
TANKER

THE fire-fighting profession and those of us who are privileged to serve it, have greatly improved techniques and equipment used to apply water to a fire. Yet, these advances are of no avail if water, the essential ingredient, is missing.

A Sharpsville Tanker will help you fight fires better . . . may mean the difference between success or failure. In business for almost one hundred years, Sharpsville has built tank trucks of every capacity and description.

Sharpsville
STEEL FABRICATORS, Inc.
Sharpsville, Pa.
Established 1856 Incorporated

Builders of Service, Crash & Ladder Trucks • Volume & High Pressure Pumpers • Squad & Emergency Cars • Storage Tanks

Kerrigan Opens Bridge Flooring Division

G. G. Greulich

Kerrigan Iron Works, Nashville, Tenn., is opening a new Bridge Flooring Division, according to Philip Kerrigan, Jr., president. The company has retained the well-known engineer-designer G. G. Greulich, as consultant for a new 4-way grid open steel bridge flooring. The operation will be known as the Greulich Bridge

Flooring Division of the company.

Mr. Greulich pioneered development of the "I-Beam Lok" bridge floor system, and established the steel "H-Pile" for bridge and other foundations. He invented, developed and set in production the famous pierced-steel plane landing mats used by the Air Force for landing planes. The same basic design has been used for roadway surfacing on military treadway floating bridges.

New chief engineer for the Greulich Bridge Flooring Division is Harvey F. Neel, formerly associated with the Pennsylvania Department of Highways.

White Motor to Make Diesel Engines

William F. Burrows

The White Motor Co., Cleveland, Ohio, manufacturers of trucks and tractors, announces the acquisition of the Engine Division of the National Supply Co., of Springfield, Ohio. The Division, well-known for its line of Superior and Atlas engines, will be known as the White Diesel Engine Division.

According to Robert F. Black, president of White Motor, the new Division will be managed by William F. Burrows, formerly in charge of diesel research and development work for the company.

New Heating Kettle for Tar and Asphalt

Latest addition to the line of asphalt and tar heating kettles offered by the WHITE MFG. CO., ELKHART, IND., is the Model F-7, an economical unit mounted on four pneumatic-tired wheels. The new kettle features a 325-gallon capacity, two White kerosene burners, and a 20-gallon fuel tank. Propane burners are available as optional equipment.

The fireproof top of the Model F-7 increases its usefulness in heating cut-back and other highly inflammable bituminous materials. The unit may be obtained with a hinged top or with a warming hood for an extra barrel. Hand or engine-driven spray pumps are available with a flexible metal or rubber steam hose, and a spray bar with an insulated handle. Other optional equipment includes a dial-type, direct-reading thermometer and hand or power agitators.

The White Mfg. Co. will furnish full information on the new heating kettle. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 786.

tomorrow is too late!

Call in National today!

Dirty, clogged water mains are a serious—dangerous threat to any fire fighting organization. Low water pressure caused by incrusted pipes often makes the difference between minor damage and major conflagration. Yes, dirt can mean disaster. Your community deserves the extra-protection of clean water mains.

And, National with almost a half-century of cleaning experience can guarantee restoration of any water main to at least 95% of its original rated capacity!

Call National today—tomorrow could be too late!

Call in National today!

NATIONAL WATER MAIN CLEANING COMPANY

50 Church Street • New York, N. Y.

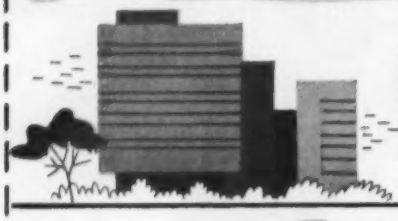
ATLANTA, GA., 333 Candler Building • BERKELEY, CALIF., 905 Grayson Street • DECATUR, GA., P. O. Box 385 • BOSTON, MASS., 115 Peterboro Street, • CHICAGO, 122 So. Michigan Avenue • ERIE, PA., 439 E. 6th Street • FLANDREAU S. D. 315 N. Crescent Street, • KANSAS CITY, MO., 406 Merchandise Mart and 2201 Grand Avenue • LITTLE FALLS, N. J., Box 91 • LOS ANGELES, 5075 Santa Fe Avenue • MINNEAPOLIS, MINN., 200 Lumber Exchange Building • RICHMOND, VA., 210 E. Franklin Street • SALT LAKE CITY, 149-151 W. Second South Street • SIGNAL MOUNTAIN, TENN., 204 Slayton Street • MONTREAL, CANADA, 2032 Union Avenue • WINNIPEG, CANADA, 576 Wall Street • HAVANA, CUBA, Lawrence H. Daniels, P. O. Box 531 • SAN JUAN, PUERTO RICO, Luis F. Caratini, Apartado 2184.

Incinerator gases

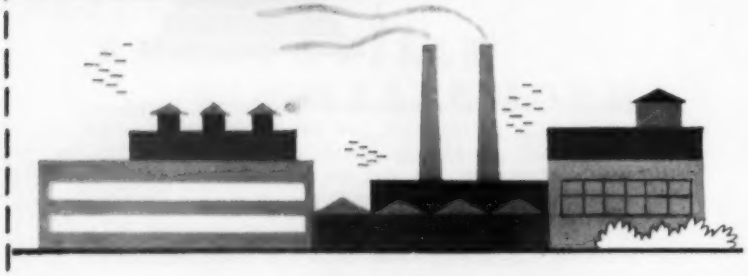
are ***NICE*** *gases*

when they're tamed and trained

by ***PEABODY Scrubbers***



Whether it's a flue-fed apartment house unit handling a few pounds of rubbish per hour, or a municipal unit handling 300 tons of garbage a day — Peabody Scrubbers really turn "foul" gas into nice, *clean* gas.



Using a multi-jet impingement baffle plate that affords extremely intimate mixture of gas and scrubbing liquid, Peabody units operate at efficiencies as high as 99%. For full details, write for Bulletin 203-B.

Incinerator gases can be NICE gases!

PEABODY

ENGINEERING CORPORATION

580 FIFTH AVENUE, NEW YORK 36, N. Y.

OFFICES IN PRINCIPAL CITIES

PEABODY LIMITED, LONDON, S.W. 1, ENGLAND

D-139

Purchasing

New Fire Hose Nozzle

Cut down water damage in schools, hospitals and other municipal institutions with the Model NHR-15, a new fire hose nozzle designed for permanent attachment to lines of hose on hose racks and cabinets. The flow of water through this Hose Rack Fog Nozzle is quickly changed from straight stream—to fog—to shut-off—with a flick of the wrist. These varying patterns of water fog are effective on burning liquids as well as general combustible blazes.

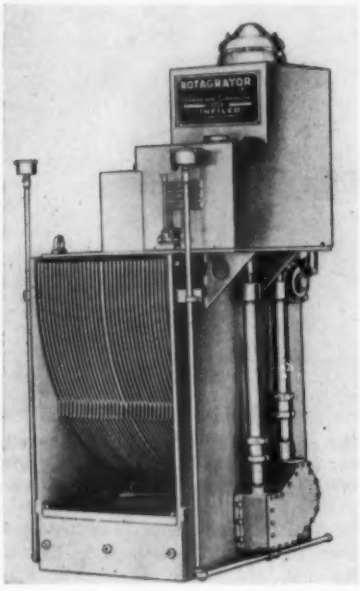
Full details on the new Hose Rack Fog Nozzle are available from the FYR-FYTER CO., 221 CRANE ST., DAYTON, OHIO. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 789.

New Screen & Comminutor for Coarse Sewage

Designed for larger communities with flows ranging from 1,900 gpm to 50,000 gpm, the "Rotagrator" screens and comminutes rags, cans, rubber products, glass, rope, wood and all coarse sewage materials. The new screen and comminutor operates without removing these materials from the flow. It functions at a low head loss, holding solids upstream until they are comminuted to a size permitting passage downstream. In this way, the

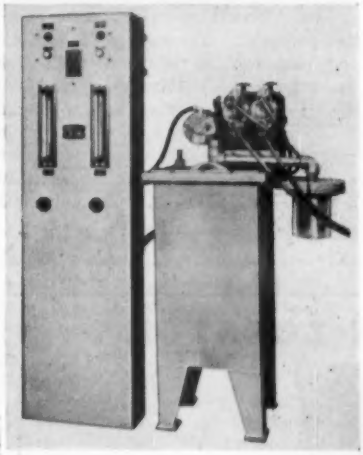
machine is able to handle a wide variety of solids efficiently.

Complete information on the new "Rotagrator" is available from INFILCO



INC., 921 S. CAMPBELL AVE., TUCSON, ARIZ. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 794.

New Silica Activator Aids Water Treatment



The Omega Machine Co. introduces the Model 63 Activator, an economical unit for the continuous preparation and feeding of activated silica in water treatment plants and, according to the manufacturer, in waste treatment processes, too. The Activator includes all of the features required for continuous silica

(*Continued on page* 280)

NEW 6 TON SELF-PROPELLED BANTAM!

* IT SELLS FOR ONLY $11,500

Look what you get in the new CR-35!

- Independent Travel, Forward & Reverse
- Turns INSIDE 40' Circle
- 360° Full Circle Swing
- Power Up & Down Boom Hoist
- Hydraulic Precision Steering
- All-Vision Cab
- Works with 9 different Attachments!

MODEL CR-35

* AS SHOWN with crane boom, outriggers, hook block, (less boom safety stops), f.o.b. Waverly, Iowa.

NO OTHER MACHINE of this size has ever offered so many time and money saving features! Lifting big loads . . . maneuvering in tight spots where other rigs can't go, the New BANTAM will let you realize greater speed and economy than you thought possible. You can't afford NOT to investigate the revolutionary New CR-35! WRITE TODAY.

CARRIER OR CRAWLER BANTAMS are outstanding performers, too! Mobile Carrier Bantam ideal for scattered assignments . . . travels up to 40 MPH! Crawler Bantam works in bad ground conditions where other rigs can't go . . . features 2-speed independent travel!

T-35A

C-35A

SCHIELD Bantam Co.

World's Largest Producers of Truck-Cranes and Excavators.

SCHIELD BANTAM COMPANY
234 Park Street, Waverly, Iowa

Please send me the FREE Brochure on Materials Handling with a Bantam!

AC-10

Name _____
Title _____
Company _____
Address _____

DICTATE REPORTS ACCURATELY-PROMPTLY!
make your car, boat or plane a "rolling office" with ATR INVERTERS
for changing your storage battery current to A.C. Household ELECTRICITY Anywhere ... in your own car!
mounted out of sight under dash or in trunk compartment!
EASY TO INSTALL
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ATR INVERTERS especially designed for operating standard 110 volt A. C. . . .
• TAPE RECORDERS • DICTATING MACHINES
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• SALESMEN • REPORTERS
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• FIREMEN • LAWYERS, ETC.
See your jobber or write factory
√NEW MODELS "A" Battery Eliminators, √NEW DESIGNS DC-AC Inverters, √NEW LITERATURE Auto Radio Vibrators
ATR AMERICAN TELEVISION & RADIO CO.
Quality Products Since 1931
SAINT PAUL 1, MINNESOTA, U. S. A.

Purchasing News

(*Continued from page* 279)

activation and is easily adjusted to prepare the activated silica sols most effective for specific treatment conditions.

Once the mixture is prepared in a transparent mixing tank, it flows to a separate aging tank for a controlled aging period. The aged activated silica is then diluted for delivery to the point of application.

The Omega Activator is designed with a central control panel; a continuous process, eliminating batching of activated silica sols; and sequence starting. It permits reagent selectivity in the choice of alum, chlorine, sodium bicarbonate, sulfuric acid and ammonium sulfate; a variation of aging concentration and aging time; and anti-gel interlock which stops activant feed if the raw silicate supply fails.

Additional information on the Model 63 is available from V. W. Langworthy, the OMEGA MACHINE CO., 345 HARRIS AVE., PROVIDENCE, R. I. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 818.

Adjustable Steel Pier

Only a speed wrench is needed to raise or lower the deck of a Hussey sectional, demountable steel pier. One man standing on the deck can do the job in seconds, facilitating compensation for varying water levels.

In addition to the new deck feature, there are installation adjustments which compensate for unevenness of bottom and the over-all height of the pier.

Hussey adjustable piers are suitable for both fresh and salt water, and are available in 12-foot sections, four and six feet wide, either complete or on an economical "built it yourself" basis.

Detailed information on the full Hussey Watersports line may be obtained from the HUSSEY MFG. CO., NORTH BERWICK, ME. Write directly, or you may use the Post Card located for your convenience on the insert following Page 282. Circle No. 820

The deck of this adjustable Hussey steel pier is easily raised and lowered by one man with a speed wrench.

New Distributor Appointed by Heil

New distributor for The Heil Co., Milwaukee, Wis., in the northern counties of Alabama is the Alabama Truck Equipment Co., according to W. A. Carlson, sales manager of the Heil Body & Hoist Division. The company will handle Heil dump bodies and hydraulic hoists, Colecto-Pak and Colectomatic garbage and refuse units, and Heiloader elevating truck tailgates. These units are especially designed for municipal refuse collection.

WILKINSON LINE LOCATOR . . .
1. Spots all pipe and cable locations before uncovering
2. Indicates depth
3. Leading utilities everywhere use it
REDUCE JOB COSTS . . . WRITE TODAY FOR FULL INFORMATION
WILKINSON PRODUCTS CO. 3987 CHEVY CHASE DRIVE PASADENA 3, CALIFORNIA

Data Processing Firms Join Forces

This month may see the joining of forces of two well-known business equipment manufacturers, when the stockholders of The Todd Co. will vote on the proposed purchase of the firm by the Burroughs Corp., of Detroit, Mich.

The Todd Co., of Rochester, N. Y., has manufactured, since 1899, protective devices such as checkwriters, signers, and other forms associated with the disbursement of funds by business and banking institutions. The Burroughs Corp., since 1886, has produced business accounting and figuring equipment, electronic computers, and many other mechanical information processors.

Under the proposed plan of reorganization, it was announced jointly by Todd President George L. Todd and Burroughs President John S. Coleman, the Todd Co. will function as a subsidiary with its own research, sales and manufacturing organization. The company's officers, management and personnel will continue in their present capacities.

New Crawler-Loader

A heavy-duty loader unit, the Model 12 WI, has been designed for use with the Oliver OC-12 crawler-tractor. A 1¼-yard capacity machine, it digs 30½ inches below ground surface, and raises to a maximum height of 12 feet, 8 inches.

The bucket on the new Oliver loader features a 37° rollback, enabling it to take larger bites and to carry heaping bucketfuls with less spilling. Because of this extra rollback, loads are carried closer to the tractor, reducing leverage and lowering the ballast required to counterbalance the tractor.

A discharge angle of 57° assures smooth dumping of sticky material. Maximum dumping height at the bucket hinge pin is 10 feet, 4 inches.

Oliver's OC-12 crawler-tractor is available with either gasoline or diesel engine. The diesel model develops 45.1 dbh, and the gas engine has a 44.3 dbh rating. Both feature a wide torque span to provide dependable lugging under all conditions.

Standard equipment on the loader model is a five lower track wheel frame and ripple grousers. This long track frame provides extra stability and balance for better loader operation.

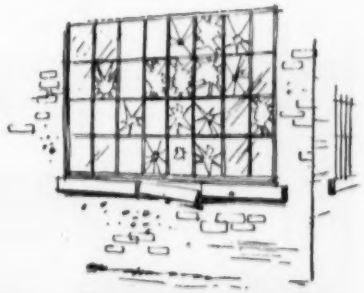
To provide for comfortable operation, the OC-12 has a full-width platform. The gearshift is in the middle of the platform and the clutch pedal is suspended from overhead, leaving ample knee and foot room to help reduce operator fatigue. Instruments, dials, starter and throttle are easy to see, reach and operate.

Detailed information on the new crawler-loader is available from The Oliver Corp., 400 W. Madison St., Chicago 6, Ill. Write directly, or you may use the Post Card on the insert following Page 282. Circle No. 822.

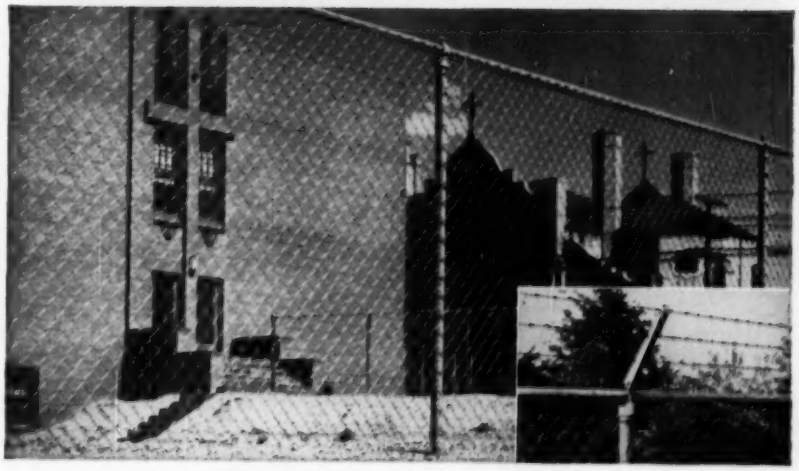
VANDALISM

costs millions...

prevent it with



REALOCK FENCE



A sturdy Realock Fence provides an effective deterrent to acts of vandalism against schools and other public buildings.

Realock Fence means ever-present, round-the-clock protection . . . eliminates the need for extra watchmen or guard personnel. Available in a wide variety of types, with or without barbed wire tops. Heavily galvanized after weaving for long-lasting weather resistance.

See your classified telephone directory for nearest sales office or write to any of our three division offices for free estimates.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Buffalo, New York

REALOCK FENCE
THE COLORADO FUEL AND IRON CORPORATION
CF&I
BRANCHES IN ALL KEY CITIES

2690

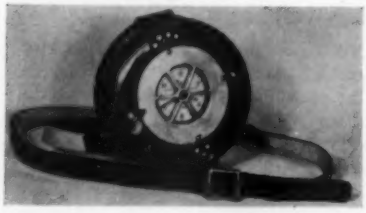
Three-Day Watchman's Clock

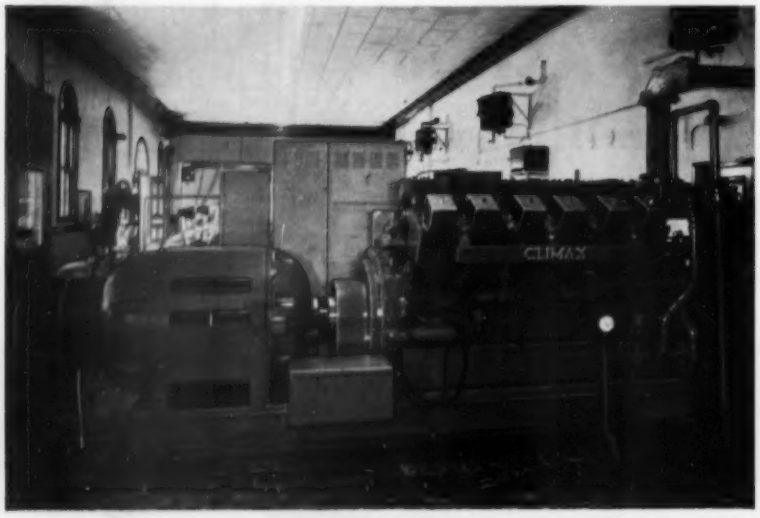
With the new three-day watchman's clock, it is unnecessary for supervisors to visit a plant during weekends or holidays to change the dial, and yet daily midweek changes are possible for more complete supervision. Newest model in the line put out by the Lathem Watchmans Clock Company, this one is known as the Vanguard.

The model has an eight-day jeweled movement sealed in a rustproof aluminum case enclosed in a leather pouch with adjustable carrying strap. A foolproof Tel-tale records the time of each opening or closing by punching a hole in the dial.

Fully approved by the Underwriters Laboratories, the mechanism has a registered patent on the use of station keys with numerals which cannot be mutilated. The keys are of silicon bronze and carry a lifetime guarantee against breakage.

For additional information, write directly to the LATHAM WATCHMANS CLOCK COMPANY, 76 THIRD STREET, NW., ATLANTA, GA., or you may use the Post Card on the insert following page 282. Circle No. 819.





CLIMAX . . . EXTRA POWER RELIABILITY

A Climax Engine driven generator protects the Tonawanda, New York Water Works during any emergencies.

This Water Works was recently completely electrified, with motor driven pumps replacing old steam driven pumps. To provide sufficient KVA capacity to start large motors a 625 KVA generator is required. It is driven by a Climax Model V-125, 605 HP engine which has ample capacity to furnish the KVA required for starting and the KW required after the motors are under full load.

The consulting engineer for the project was Metcalf & Eddy of Boston.

climax

FOR COMPLETE INFORMATION, WRITE TO . . .

ENGINE AND PUMP MFG. CO.

208 So. La Salle St.

CHICAGO 4, ILLINOIS

Factory–Clinton, Ia. *District Office*–Dallas, Tex.

From Emergency to Prime Power Service

After three years on the proving grounds of emergency service, the mobile generators of the Caterpillar Tractor Company are now offered as a source of prime or supplementary power. The line includes 10 mobile and skid-mounted diesel electric sets.

In addition to providing emergency service for hospitals and television stations as well as racing to breach the gap left by the breaking down of municipal generators, the well-known electric sets have traveled the nation to demonstrate their scope by serving up prime or supplementary power for municipal power plants, television and radio stations, electric shovels, rock crushers, as well as other electrical needs.

Four units, Caterpillar D397, D386, D375, and D364, are trailer mounted. These are rated from 155 kw to 300 kw and can offer nonstop duty. Each is available with a 60-cycle, three-phase generator that operates at 1,200 rpm, or a 50-cycle, three-phase generator that operates at 1,000 rpm. Both types of generators are available in arrangements with other frequencies, number of phases, and voltages.

Five smaller units include the D337, D326, D315, D318, and D311 Skid-Mounted Electric Sets. Power ranges from 116 kw in the 1,200-rpm, 60-cycle unit to 18 kw in the 1,000-rpm, 50-cycle set. Generators are either self- or externally regulated.

A special electric set, originally designed for the Air Force, is a self-contained, trailer-mounted set—the D364. It has a 150-kw, 60-cycle, three-phase, 440-volt generator and switchgear.

For additional information, write directly to the CATERPILLAR TRACTOR COMPANY, PEORIA, ILL., or you may use the Post Card on the insert following Page 282. Circle No. 821.

What's Your Problem?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:

Please send me further information on products described in "Purchasing News" section beginning on page 239 of your June 1955 issue, as circled below:

786	791	796	801	806	811	816	821
787	792	797	802	807	812	817	822
788	793	798	803	808	813	818	823
789	794	799	804	809	814	819	824
790	795	800	805	810	815	820	825

I would also like to receive manufacturers' booklets on .....

.....

.....

.....

.....

Name: (Please Print).....

Title: .....

Address: .....

..... 6-55

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 FOURTH AVENUE
NEW YORK 16, N. Y.

In A Jam?

You can obtain manufacturers' literature by making use of these convenient Business Reply Cards! A quick easy way to get full details on products and services mentioned or advertised in this issue.

To THE AMERICAN CITY's Catalog Supply Department:

Please send literature on items numbered as follows, starting on page 29 of your June 1955 issue:

215	221	227	233	239	245	251	257	263	269	275	281	287	293	299	305	311	317	323
216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
217	223	229	235	241	247	253	259	265	271	277	283	289	295	301	307	313	319	325
218	224	230	236	242	248	254	260	266	272	278	284	290	296	302	308	314	320	326
219	225	231	237	243	249	255	261	267	273	279	285	291	297	303	309	315	321	327
220	226	232	238	244	250	256	262	268	274	280	286	292	298	304	310	316	322	328

I would also like to receive manufacturers' booklets on.....

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Postage Will be Paid by Addressee

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BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

NEW YORK 16, N. Y.

New Flow Meter Introduced to Waterworks Men

Waterworks men will get their first look at the new Foxboro magnetic flow meter at the A.W.W.A. Convention.

A magnetic flow meter will be shown at the A.W.W.A. Convention this month, by THE FOXBORO CO., of FOXBORO, MASS. Unlike traditional metering methods, the new instrument requires no line restriction such as an orifice plate or venturi tube, therefore it adds no pressure drop to a system. Successful applications of the unit are already reported in the metering of liquids and slurries. Waterworks men at the Convention will watch the meter record the flow of ordinary tap water.

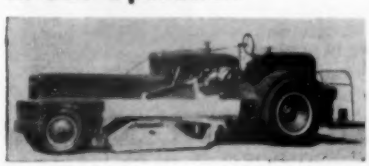
Pneumatic instrumentation for rapid-sand-filter operation has been centralized in a Foxboro pedestal-type operating table which will be demonstrated, featuring the compact indicating, recording and controlling instruments in the Consotrol line. Another new development, the Teletax Telemetering System, will occupy the remainder of the Foxboro display.

Huber-Warco Names New Distributors

The Huber-Warco Co., of Marion, Ohio, announces the appointment of the following new distributors to handle its complete line of tandem rollers, three-wheel rollers and graders:

R. G. Moeller Co., Detroit, Mich.; Caird Engineering Works, Helena, Mont.; The Bode-Finn Co., Cincinnati, Ohio, and its branch office in Dayton, Ohio; and The Sawtooth Co., Boise, Idaho.

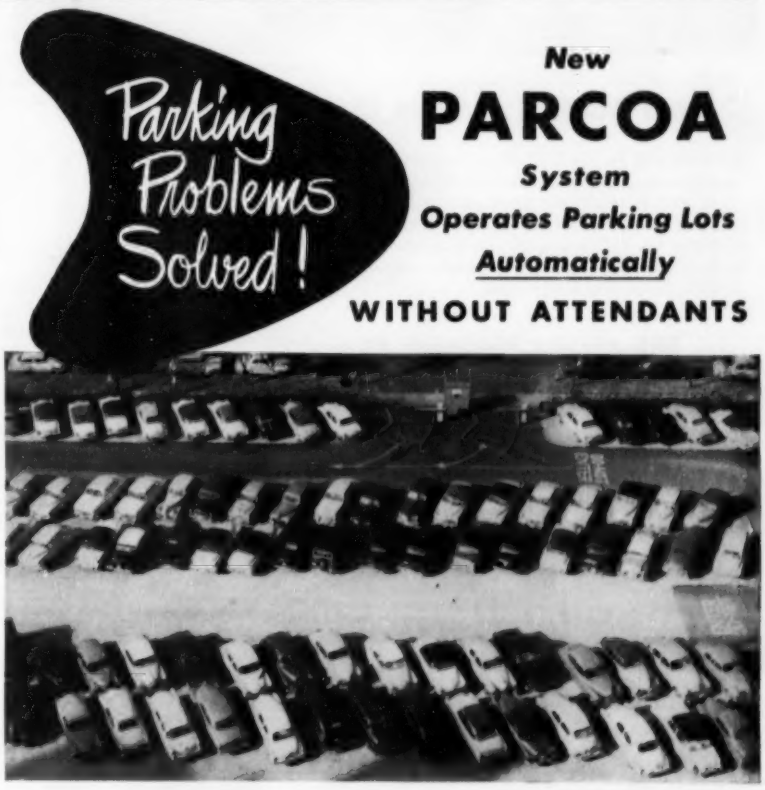
Heats & Planes Asphalt In One Operation



Simplify the maintenance of asphalt streets, highways, roads and airport runways with this new asphalt heater-planer offered by the MONATCO MFG. CORP., 1401 WOODLAND, KANSAS CITY, MO. In one operation the unit heats the asphalt from top to bottom, softens it, and planes off all irregularities. Ruts are filled and cracks sealed with pre-heated material, and the new, level surface can be re-surfaced or opened to traffic.

Temperature under the heating hood is held uniform and constant, regardless of how fast the machine is moving, by a separate motor that operates the blower and fuel pump. In addition, extra heat is provided for more thorough softening and conditioning of the asphalt before the planing blade reaches it. The blade, arranged in two sections to windrow in the middle, cuts up to 1 inch deep and 78 inches wide.

The new unit operates without smoke and won't incinerate the asphalt. For additional data, write the manufacturer directly, or you may use the Post Card on the insert following Page 282. Circle No. 815.



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About People

This is a photograph of a pencil sketch of Walter E. Irving, often called the father of the open-steel-flooring industry, and founder and president of the **Irving Subway Grating Co., Inc.,** Long Island City, N. Y. The portrait was made in Mexico City recently by Fernando Guerin Meyer, a well-known Mexican artist.

W. E. Irving

A recent meeting of the stockholders of the **Wm. Bros Boiler and Mfg. Co.,** Minneapolis, Minn., saw the election of A. O. Williamson to the company's board of directors. Mr. Williamson joined the large steel fabricating firm in 1935 as chief draftsman in the Road Machinery Division. He was appointed manager of that Division in 1952.

A. O. Williamson

Succeeding the late William A. Roberts as president of the **Allis-Chalmers Mfg. Co.,** Milwaukee, Wis., is Robert S. Stevenson, formerly executive vice-president of the firm. Mr. Stevenson began as a salesman in the company's Tractor Division in 1933. He has since served in various managerial positions, as vice-president of the Tractor Division, and as a member of the company's board of directors.

R. S. Stevenson

In addition to his new position as vice-president of the Tar Products Division,

Koppers Co., Inc., Pittsburgh, Pa., F. L. Byrom will take on the duties of assistant manager. He succeeds R. R. Holmes, new vice-president and general manager of the Division.

When R. B. Wood takes over as sales manager for the **Cataphote Corp.,** Toledo, Ohio, he will handle the domestic sales of a complete line of street-name signs and plain and reflectorized traffic-marking paint, according to C. E. Searight, vice-president in charge of sales. The new executive will coordinate the activities of the company's Jackson, Mississippi and Toledo sales staffs.

From the **Globe Phone Mfg. Corp.,** Reading, Mass., we learned of the recent death of Walter C. Mooney, president of the firm for the past 40 years. He is succeeded as top executive by A. J. Schneider.

Dwight R. Craig has been appointed administrative assistant for the engineering department of **The Cooper-Bessemer Corp.,** Mount Vernon, Ohio, according to Ralph L. Boyer, vice-president and chief engineer. Mr. Craig will have a hand in coordinating the efforts of the company's research and development program.

New resident plant manager for the **Brooks Equipment & Mfg. Co.,** Knoxville, Tenn., is Frank Lang, Jr., former plant superintendent and personnel manager for the Wausau Mfg. Co. The Brooks Co., incidentally, is now operating as a subsidiary of the Borg-Warner Corp., of Chicago, Ill.

A. F. Wood has been appointed sales manager of the **Marlow Pump Division** of the Bell & Gossett Co., Ridgewood, N. J.

Zone 2 of **Sherman Products, Inc.,** Royal Oak, Mich., which comprises the northwest section of the United States, will be managed by Walter L. Beers, according to W. F. Beckman, vice-president of the firm. Mr. Beers has been a Sherman district manager in that area for the past three years.

When Louis C. Rove takes over as Great Lakes district manager for the **Nordberg Mfg Co.,** he will serve the states of Michigan, Indiana, Ohio, Western Pennsylvania and Eastern Kentucky, according to R. W. Bayerlein, vice-president of the firm. William C. Young, formerly district manager of the Great Lakes territory, has been transferred to Industrial and Petroleum Sales. Main offices of the Nordberg Mfg. Co., are located in Milwaukee, Wis.

E. Gordon Ball, Jr. has been promoted from Chicago district sales manager to vice-president in charge of sales for the **Luria Engineering Co.,** Bethlehem, Pa. He succeeds Grant A. Sattem, new executive vice-president of Luria-Cournand, Inc., of Havre de Grace, Md.

In addition to assisting William H. Wheeler, president of **Airkem, Inc.,** New York City, Frank W. Conkling will take on the duties of general sales manager. Mr. Conkling joined the company in 1946, serving first as smoke odor service manager and then as director of research.

Scheduled to manage advertising for the **Fischer & Porter Co.,** Hatboro, Pa., is Thomas A. Patterson, Jr., formerly an account executive with the Ketchum, MacLeod & Grove advertising agency. The company supplies water and sewage-treatment plants with chlorinators, process instrumentation equipment, and centralized control stations.

T. A. Patterson, Jr.

Richard Hazen and Alfred W. Sawyer, consulting engineers, have moved their offices to 122 E. 42nd St., New York 17, N. Y. Mr. Hazen was recently elected president of the Metropolitan Section of the American Society of Civil Engineers.

Charles F. Kennedy, president of the **Kennedy Valve Mfg. Co., Inc.,** Elmira, N. Y., announces the appointment of Walter D. Wood as vice-president in charge of sales. Mr. Wood was formerly associated with the A. O. Smith Corp., and before that with the Lincoln Electric Co.

W. D. Wood

A new vice-president, Douglas Wallace was elected at the annual directors meeting of the **Graybar Electric Co.,** New York City. Mr. Wallace is also a member of the company's board of directors.

As special factory representative for the **Van Brush Mfg. Co., Inc.,** Kansas City, Mo., Robert A. Chenoweth will handle sales and service assignments in the states of Missouri, Kansas, Iowa, Nebraska and Colorado. The company manufactures brushes, brooms and mops for every municipal need.

R. A. Chenoweth

New appointments by **The Foxboro Corp.,** Foxboro, Mass., include C. C. Fuller, vice-president; H. O. Ehrisman, general sales manager; and J. J. Burnett, field sales manager. C. E. Sullivan, a vice-president of the company, has retired from active sales direction but will continue to serve the organization in a consulting capacity. Foxboro's expanding international operations will be headed by C. Schwarzler.

Buel M. Wallis has been appointed general sales manager for the **Schield Bantam Co.,** Waverly, Ia.

The Holophane Co., Inc., New York City, has appointed Warren Edman, former manager of street lighting, new vice-president in charge of the Street Lighting Department. Mr. Edman will make his headquarters at the firm's factory and engineering center in Newark, Ohio.

A. C. Thomas has been appointed assistant general sales manager of **The Jaeger Machine Co.,** Columbus, Ohio, according to J. H. Yearling, general sales manager. Mr. Thomas' former position as sales manager of the company's Truck Mixer Division has been assigned to Emil L. Baugh. New southeastern field representative for Jaeger is R. E. Fowler.

As manager of Industrial Sales for the Chicago district of **B-I-F Industries, Inc.,** M. H. Strickland will handle the products of Builders-Providence, Inc., Proportioneers, Inc., and the Omega Machine Co., all B-I-F divisions. Main offices of the parent company are located in Providence, R. I.

In addition to his new duties as advertising manager of the **United Metal Cabinet Corp.,** Brooklyn, N. Y., Gerald Weiner will take on the job of public relations director, according to Samuel Hammer, president. The company supplies municipalities with sanitary, low-cost waste receptacles.

Among the new executive officers announced at the annual director's meeting of the **M. H. Detrick Co.,** Chicago, Ill., were Louis Ellman, president; and J. C. Wilson and R. J. Stanley, vice-presidents. C. B. Edgar is new district manager for the firm's Pittsburgh office.

Two new sales representatives are announced by **The Heil Co.,** Milwaukee, Wis. William Fullerton will handle the company's dump bodies and hydraulic hoists, and petroleum and milk transport tanks, and Dick Berry will work with Heil Colectomatic refuse units. Both men will operate from the firm's Union (N.J.) sales office.

Recent appointments by the **Enterprise Engine & Machinery Co.,** a subsidiary of the General Metals Corp., include Michael E. Conway, new advertising manager; Robert M. Pearson, field sales manager; and L. C. Michie, manager of the company's St. Louis district. Main offices of Enterprise Engine & Machinery are located in San Francisco, Calif.

J. A. Cuneo, vice-president in charge of sales for **Fairbanks, Morse & Co.,** Chicago, Ill., announces the appointment of John C. Elmburg as assistant general sales manager. Mr. Elmburg, formerly manager of F-M's Portland (Ore.) branch, has been with the company for the past 26 years.

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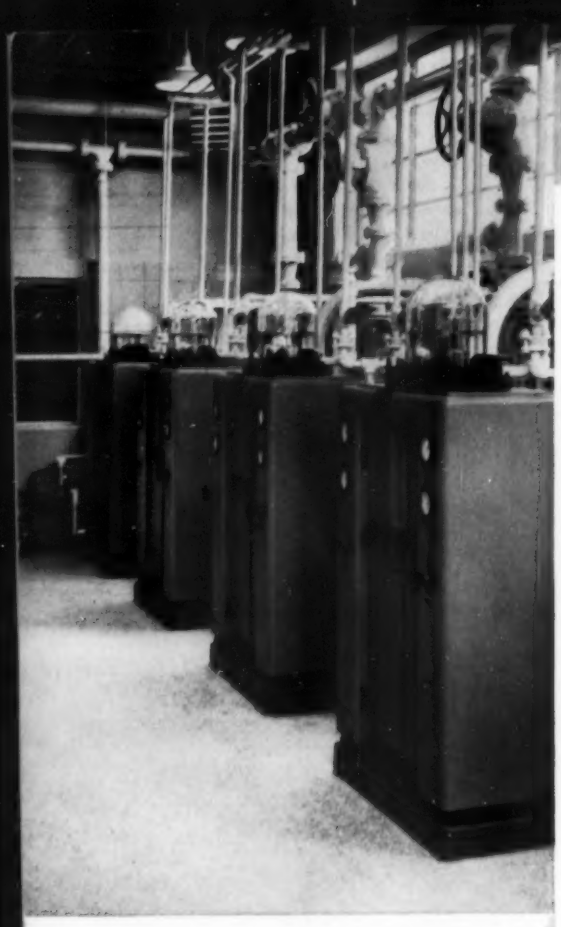

CITY OF HOUSTON

ROY HOFHEINZ, Mayor

UTILITIES DEPARTMENT

San Jacinto Water System
12555 Clinton Drive
Houston 15, Texas
January 13, 1955

Wallace and Tiernan
1112 National City Bank Building
Dallas, Texas

Gentlemen:

The initial installation of 14 Wallace and Tiernan Water Diaphragm Chlorinators in Houston was made in mid-1929 under my supervision. Since that time the number of your chlorinators has increased to 35 at the present time.

The most recent installation was last year in your furnishing and installing four 6000 lb. per day Chlorinators at the Houston Water Purification Plant.

In addition to Wallace and Tiernan Chlorinators, we have 7 of your Chlorine Residual Recorders which were installed under my direction.

In our dealings with your organization for more than a quarter of a century we have relied on your personnel for service and technical advice and to this time have not been disappointed. Your equipment has stood the test of time and has been used under many adverse conditions and always with satisfactory performance.

Very truly yours,

Clyde R. Harvill

Clyde R. Harvill
Superintendent
San Jacinto Water System

W&T WATER DIAPHRAGM EQUIPMENT

"...has stood the test of time..."

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